

# CIO

# enterprise

Section Two • May 15, 1998

**The IT buck  
stops where?  
At Citibank,  
it stops at the  
desk of Mary  
Alice Taylor,  
who merges  
the roles of  
COO and CIO.**

## FYI

FROM: \_\_\_\_\_

Attached is a copy of **CIO Enterprise**. The articles take a cross-functional look at leveraging information technology to add enterprise value. Thought you might be interested...

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## Features

### 36 Someone to Watch Over IT

**COVER STORY: MANAGING I.T.** As the information technology function becomes more critical to business success, so does the job of overseeing it.

*By Jennifer Bresnahan*

### 48 This Bill's for You

**BILLING STRATEGIES** The traditional bill is becoming a thing of the past. With convergent billing, many companies are finding new ways to transform monthly invoices into featured attractions. *By Carol Hildebrand*

### 58 Economic Dissension

**ROUNDTABLE: YEAR 2000 AND THE ECONOMY** Could the Y2K bug drag the economy into a recession? Or are its potential deleterious effects on the economy overblown?

### 68 Destroy Your Value Chain—Before Someone Else Does

**BOOK EXCERPT: UNLEASHING THE KILLER APPLICATION** The business model that creates and distributes your goods and services is imperiled by killer applications. Your best chance to survive is to strike first.

*By Larry Downes and Chunka Mui*



**ON THE COVER:** Mary Alice Taylor faces critical business and IT decisions every day in her function as Citibank's COO and CIO.

*Cover photo by Fernald / Gray*





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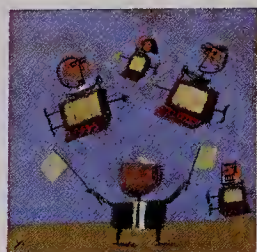
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## Columns

- 28 Measuring Up**  
**INTELLECTUAL CAPITALISM** Can companies measure the return on knowledge management? Should they try?  
*By Gary Abramson*

- 74 Bang for the Buck?**



**REALITY BYTES** Online advertising holds great promise, but until the technology catches up with the hype, its payback will remain elusive.  
*By Megan Santosus*

- 76 The Customer Software Shakeout**  
**HANDSHAKE** It's 2002. Do you know where your customer data is?  
*By Tom Davenport*

- 84 Digging for Data**  
**LEARNING CURVE** If you want to discover the benefits and rewards of data warehousing, make sure you look before you leap. *By Tom Wailgum*

## Departments

- 12 Contributor's Page**

- 14 In My Opinion**  
 Letter from the publisher •  
 New on our Web site • How  
 to reach us

- 18 Plugged In**  
 Gender Bender • E-mail and HR • Read Me—Free  
 Money! • Penal Coding • Bell Smiles in His Grave • Tips  
 from the Tweed • It Takes a Village

- 80 Index**

*Enterprise Value Awards  
 application follows  
 Page 82 of Section 1.*



## Inside Section 1

### COVER STORY: DATA MINING

Marketing secrets from the financial sector show how data mining charts a profitable course to customer management.

**END USER SUPPORT** Does your help desk do more than respond to crises? Leading groups use their insight into users' problems to influence the entire application life cycle.

**STRATEGIC SYSTEMS REVISITED** An update of three strategic launches on which CIO has reported in the past.

**EXECUTIVE COUNSEL** If you can't solve your staffing crisis at home, should you try turning your attention overseas?

**EMERGING TECHNOLOGY** What to do when the natives don't speak SQL.

**META VIEW** Help desks can cut costs and enhance productivity. Is yours meeting the mark?

**WORKING SMART** Advanced Micro Devices uses automation to squeeze out the paper-pushing handoffs inherent in the purchasing process.





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# Re: IT Governance

A DECADE'S PERSPECTIVE ON I.T. governance issues got me thinking about Senior Writer Jennifer Bresnahan's interesting snapshots of so-called "other Os" (senior executives outside the IT function) who are accountable for the overall performance of information technology in their organizations (see "Someone to Watch Over IT," Page 36). They are the people to whom CIOs report.

Two of the five interview subjects happen to be CFOs, and at a third profiled organization, the CIO reports to the CFO—meaning that at more than half the companies, a traditional model of IT governance prevails. It's tempting to second-guess Bresnahan's sources, but of course they are all doing what fits best with their cultures and business objectives, and we don't presume to know better.

But still.... *CIO* magazine has consistently taken the position that because technology is a strategic activity, CIOs ought to be peers of the other functional leaders and thus ought to report to the COO or the CEO. Among other reasons, we believe that the broad scope of an organization's technology-powered activities will best be served by a CIO who is beholden to no single function in particular—no matter how enlightened its leader.

The trajectory of the CIO role has been moving away from the traditional CFO reporting relationship. However, some evidence suggests that CFOs as a class may regret their diminished authority over so essential and capital-intensive a function. Now maybe it's just a coincidence that Bresnahan found so many CFOs still in the saddle. But then maybe it's not. (I imagine a restless posse of CFOs riding the corporate range, rounding up stray CIOs and slapping a double-F "finance function" brand on their hides.)

Most inspiring among Bresnahan's bunch is Citibank's Mary Alice Taylor, who is both CIO and COO in a single package. At an IT-powered enterprise such as Citibank, where technology and the business drivers are so clearly merged, finding someone who straddles the line is both unsurprising and heartening.

Anyhow, we're wondering who holds the reins at your place? And why? Every organization is different and has its reasons for doing things the way it does. Tell us your reasoning.

  
Lew McCreary  
Editorial Director  
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**CIOs ought to be peers of the other functional leaders.**



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# In My Opinion

I'M GLAD TO HEAR THAT AFTER A slow start, corporate America seems to be increasing its attack on the year 2000 (Y2K) bug.

Rubin Systems Inc. recently completed a survey of information technology executives representing 128 of the country's largest corporations for Cap Gemini America. In the past five months alone, the percentage of respondents having launched a "full-fledged" strategy to overcome Y2K computer problems soared from 20 percent to 60 percent. It's distressing to note, however, that 37 percent reported having already experienced a Y2K-related computer failure.

"Now persuaded of the seriousness of the issue, it appears that corporate America is coming to grips with the year 2000 challenge," says Jim Woodward, senior vice president of Cap Gemini America. "The survey results indicate that addressing the year 2000 date change has become a priority for a majority of top corporate decision makers."

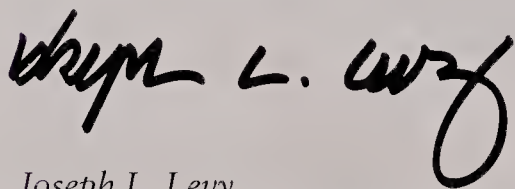
This survey of IT executives in 12 industry sectors has been conducted since March 1995 and systematically monitors corporate America's readiness for the year 2000. Respondents to the poll account for approximately one-seventh of the United States' gross domestic product.

"Even though American management has begun to come to terms with the year 2000 challenge, a great

deal of work lies ahead," Woodward says.

It's unfortunate that the percentage of companies that have deferred work on new IT applications has risen from 11 percent a year ago to 20 percent as of April. Likewise, the percentage of firms deferring enhancements to existing systems has increased from 22 percent to 33 percent over the same period.

Where does your organization stand? For some CIOs, the light at the end of the tunnel is the sun. For others, it's an oncoming train. As always, I'm interested in your thoughts and ideas regarding the Y2K problem.



Joseph L. Levy  
President, CEO and Group Publisher  
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**Nearly 40 percent  
of respondents  
already had a Y2K  
computer failure.**

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Edited by Todd Datz

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Attention  
Economics 20

In Their Own  
Words 20

Hiring Practices  
24

Power Phones  
24

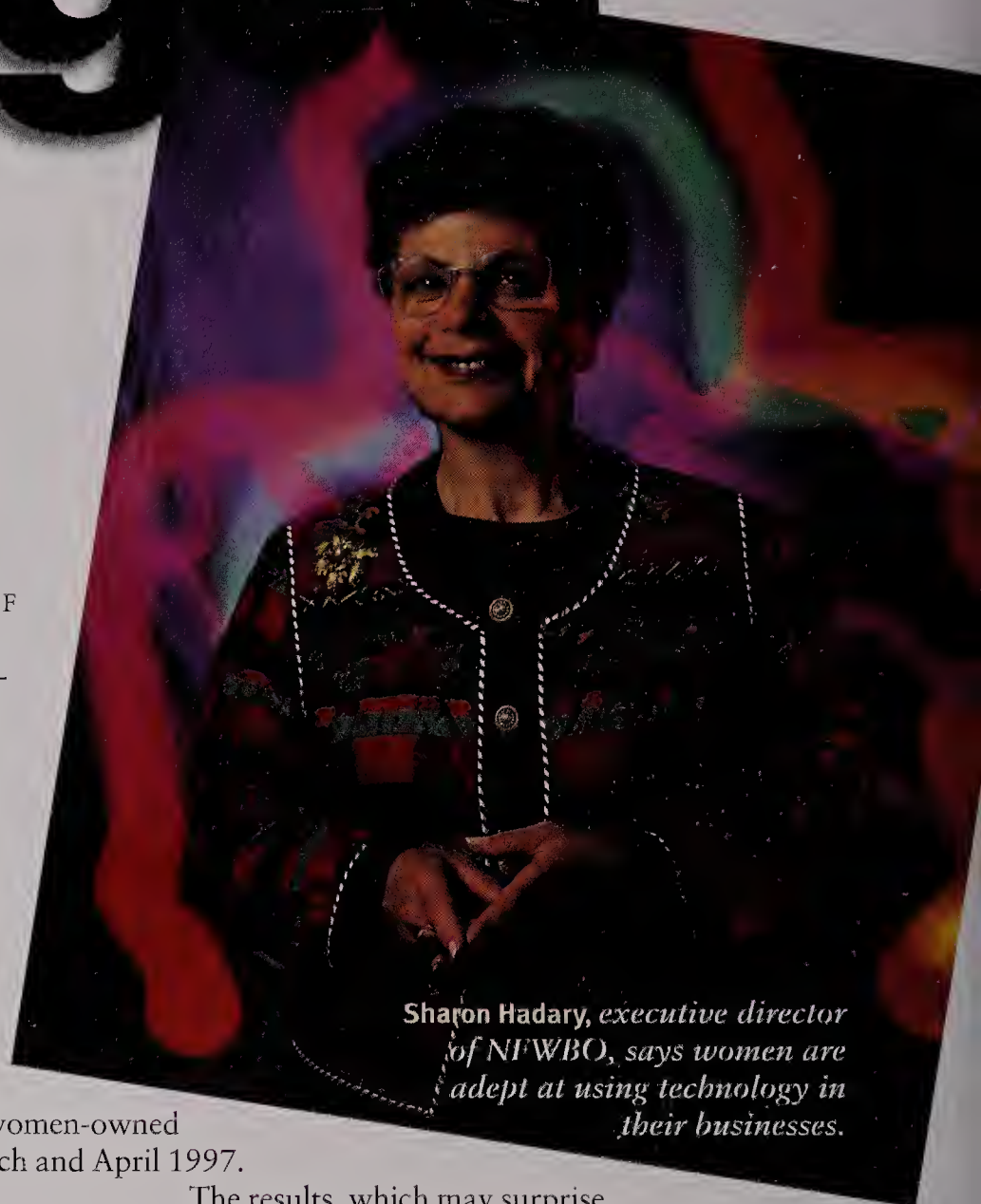
IT and Academia  
26

Growth Strategy  
26

## Women and the Web

### Gender Bender

**M**AKERS AND MARKETERS OF computers and technology: Get in touch with your feminine side. Women are more likely than men to use new technology and the Internet to accelerate the growth of their companies, according to a survey by the National Foundation for Women Business Owners (NFWBO), a nonprofit research foundation based in Silver Spring, Md. The survey, "Embracing the Information Age: A Comparison of Women and Men Business Owners," looked at the practices of nearly 800 men- and women-owned companies in the United States in March and April 1997.



*Sharon Hadary, executive director of NFWBO, says women are adept at using technology in their businesses.*

## Survey Says

### E-mail and HR

ACCORDING TO A RECENT SURVEY ON E-MAIL AND THE WEB from the Society for Human Resource Management, **86** percent of **757** human resources professionals surveyed use e-mail—but the numbers are less overwhelming when it comes to managing the use of it. Only **51** percent of respondents' organizations train employees on the proper use of e-mail, and only **52** percent have formal written policies addressing e-mail. If you think there's no need for e-mail policies, consider this: **6** percent of survey respondents have been asked to produce e-mails as evidence in lawsuits, and **22** percent have received employee complaints about inappropriate or offensive e-mails. ■

The results, which may surprise those who suspect women are wary of new technology, show that women who run their own companies are more likely than their male counterparts to subscribe to an online service, have a home page and use the Internet to communicate or conduct research. Survey results "bust the myth that women are not comfortable using technology," says **Sharon Hadary**, executive director of NFWBO. As one possible explanation, Hadary notes that women take a more open, less conventional approach toward business methods than men and tend to be proactive about sampling new ways of information sharing. She adds that women use the Internet and technology in a slightly different way than men.

The survey says that women are more willing than men to use the Internet to seek partnerships and foster communication with other business owners. The contrast isn't only on the user end, either. The survey discovered distinct differences in the way women make decisions about technology purchases, finding that women are more apt than men to place importance on vendor knowledge, vendor experi-

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## Plugged In

ence and toll-free help lines than men. And more women than men credit technology with helping their business efforts.

The survey, which was commissioned by IBM Corp., represents the third consecutive year Big Blue and NFWBO have come together to look at the way women in business use technology. "Until it's in black and white, you can't put a number to it," says **Sarah Hudanich**, market executive for women-owned business at IBM, which has dedicated significant marketing efforts to targeting women and partnering with women's groups and foundations. The survey puts some cold, hard facts and figures behind IBM's assumptions about women's use of technology, she adds. "We're just thrilled that women are accepting [technology] and using it as a competitive advantage."

Maybe it's time to take another look at that gender gap.  
—Meg Mitchell

### Attention Economics

## Read Me—Free Money!

**N**ETIZENS ARE AMONG THE corneriest creatures alive. They click and link at will, foiling companies' carefully laid plans to capture their scattered attention with cool graphics, products and content. Organizations hoping to make money from their Web sites must figure out how to stop potential customers from flitting about. Fortunately, a new breed of companies has cropped up to address that problem. Call it what you will—incentives, direct marketing or bribery—but the hot cybermethod of choice these days is to give something free in exchange for people's attention.

Businesses that contract with Portland, Ore.-based InternetPerks Inc., for example, can entice customers with electronic IncentiveWare gifts. Companies purchase IncentiveWare for \$6,000 per year, then pay 5 cents to InternetPerks every time a customer downloads a gift onto his or her desktop. Gift options

include a personal journal, NBA schedule, toll-free phone directory, financial toolbox and golf information. The gifts, which bear the participating company's logo, enable companies to build their brands and gain access to the most valuable real estate in the world—the customer's desktop.

Plano, Texas-based Electronic Data Systems Corp. (EDS) is currently developing an IncentiveWare gift to promote its role as the official information technology services provider for the 1998 World Cup soccer tournament. For example, visitors to the EDS Web site can download the World Cup schedule. "People who are going to that [page on our] site are obviously very interested in the World Cup," says **Randy Denosowicz**, corporate advertising manager at EDS.

"Anytime they refer to the schedule [online], they'll see the EDS logo." In addition, several EDS business units are developing customized gifts. For instance, the energy unit is creating an address book for a major client with contact information and pictures of the EDS energy unit team. "In any marketplace, increasing your brand awareness is extremely valuable," says Denosowicz. "This is a unique tool to do that." Some companies employ less subtle tactics for luring customers to their Web sites: They pay

### In Their Own Words

**"Senior managers act as a large sphincter muscle at the top of an organization because they constrict learning at the top."**

—Bruce Roselle, president of Roselle Associates in Minneapolis, on the lack of effective managerial training for senior executives







## Everything you need to know about web-to-host but didn't know who to ask.

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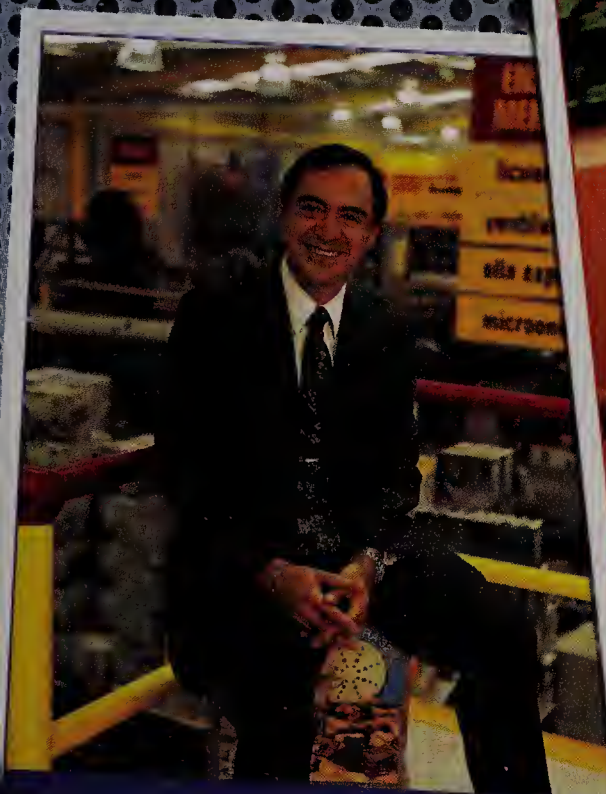
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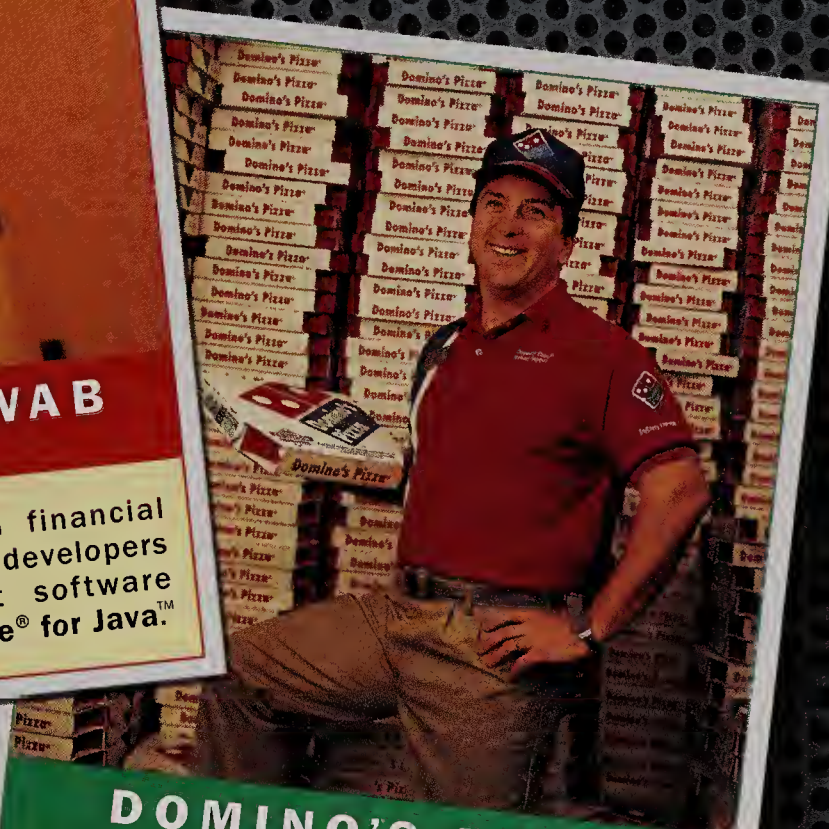
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## Plugged In

them outright. This is the business model touted by CyberGold Inc., a Berkeley, Calif.-based online marketing and advertising company.

"We've shifted from a money-based economy to an attention economy, in which the most valued commodity of exchange—and also that which is in shortest supply—is attention," says President and CEO **Nat Goldhaber**. "If [companies] want your attention, they should compensate you for it."

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being offered at CyberGold corporate customers' Web sites. For example, he recently rented an Alamo car after an e-mail led him to a Web site that offered a special promotional coupon.

If you're surfing for dollars, InternetPerks' Web site can be found at [www.internetperks.com](http://www.internetperks.com) and CyberGold's at [www.cybergold.com](http://www.cybergold.com).

—Jennifer Bresnahan

### Hiring Practices

## Penal Coding

**S**OLUTIONS TO THE I.T. STAFFING CRISIS ARE GETTING MORE and more creative. The latest example comes from across the pond in Britain. Upon hearing about the shortage of workers at ICL Inc.'s systems and services group, British prison authorities approached the London-based company with an idea: Why not leverage the code writing skills of the country's largest captive workforce? The provider of systems and services, which had already resorted to short-term recruitment of its own retirees to beef up its understaffed Y2K team, agreed to explore the idea.



"Prisoners these days just don't sit there filling mail bags; lots [of them] are undertaking meaningful commercial work. Many prisons have quite capable computing facilities," says **Neil Pattie**, ICL's head of media and public relations. So company officials visited a pilot prison site. "But it was rather disappointing; we didn't see much evidence of the skills we were seeking. A few people had Cobol skills, but [the skills were] insufficient to make it a viable exercise," Pattie says. Unless considerable numbers of programmers start breaking laws, the plan is dead. But the unusual proposal did bring ICL an unexpected benefit. The nationwide publicity over recruiting retirees and the prison initiative inspired more than 300 Y2K coders to submit their résumés, enough for ICL to put out the word that it's home free for now. ■

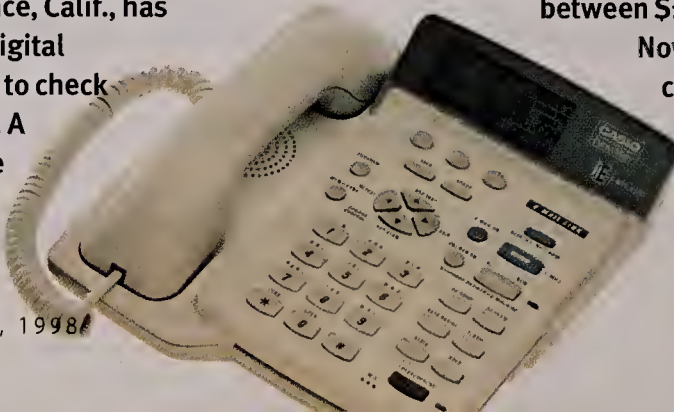
### Power Phones

## Bell Smiles in His Grave

**Y**OUR ANSWERING MACHINE AIN'T JUST FOR MESSAGES anymore—well, voice messages anyway. Casio PhoneMate Inc. in Torrance, Calif., has created the IT-380, a telephone and digital answering machine that allows users to check e-mail without turning on a computer. A four-line LCD screen displays the date and time received, name of sender and subject line for each e-mail

message. Users can then decide whether they want to make a phone call or boot up their computer to read any of the messages. **Dennis Cox**, vice president of marketing for Casio PhoneMate, says the IT-380 can operate two e-mail accounts, which is ideal for a commercial user who has a second personal account. The estimated price of the machine, which is scheduled to be available in June 1998, is between \$129 and \$149.

Now that e-mail can seemingly be checked from multiple devices every waking hour, embedding e-mail capability in your pillow ("Wake up Jones, you've got messages!") cannot be far behind. ■







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## IT and Academia

### Tips from the Tweed

SCHOLARLY JOURNALS aren't on your IT reading list? Perhaps you've been looking for ROI in all the wrong places. A small but growing circle of practical-minded academics is turning its research attention to the untapped business potential of IT and coming up with analysis and suggestions that your friendly consultant would have you pay dearly for.

The broad lesson from a half-dozen case studies published in the December 1997 issue of *Management Science* is that millions of dollars in revenue are being forfeited because of companies' trial-and-error experimentation with IT. To stop the seepage of dollars, the authors suggest that companies try a methodical R&D approach to their IT decision making. Using this approach, one author unearthed hidden costs in the way a large financial institution used its software. Another author concluded that monitoring price and service performance could provide finan-

cial benefits for both retailers and their suppliers.

"The technology has really advanced by leaps and bounds, but our understanding of how to use it for new business structures has not," says **Erik Brynjolfsson**, a professor at MIT's Sloan School of Management in Cambridge, Mass., who specializes in evaluating IT's impact on organizations. Brynjolfsson is a co-editor of the *Management Science* special issue in which the articles appear.

In the ongoing academic debate over pure versus practical research, Brynjolfsson says he is leading the charge of management science academics who want scholarly research to

have practical applications for IT managers. To break out of the narrow readership of academic journals, the professor has taken to posting his own yet-unpublished work on his Web page ([web.mit.edu/sloan/www/faculty/](http://web.mit.edu/sloan/www/faculty/)). One current online paper tells the story of a company that changed its business structure to give line workers the authority to implement changes in business operations. Taking advantage of this opportunity, the workers used their knowledge of the shop floor to more efficiently schedule machinery, which led to a greater return on the company's IT investment.

So if your quest for IT research takes you to the ivory tower, don't be put off by article titles such as "Contracting Structures for Custom Software Development: The Impacts of Informational Rents and Uncertainty on Internal Development and Outsourcing." Practical academics will tell you that this article's conclusion is clear: Uncertainty about development costs makes managers shy away from outsourcing software development. Further information about *Management Science* and other IT journals can be found at [www.informs.org/pubs/pubshome.html](http://www.informs.org/pubs/pubshome.html).

—Gary Abramson



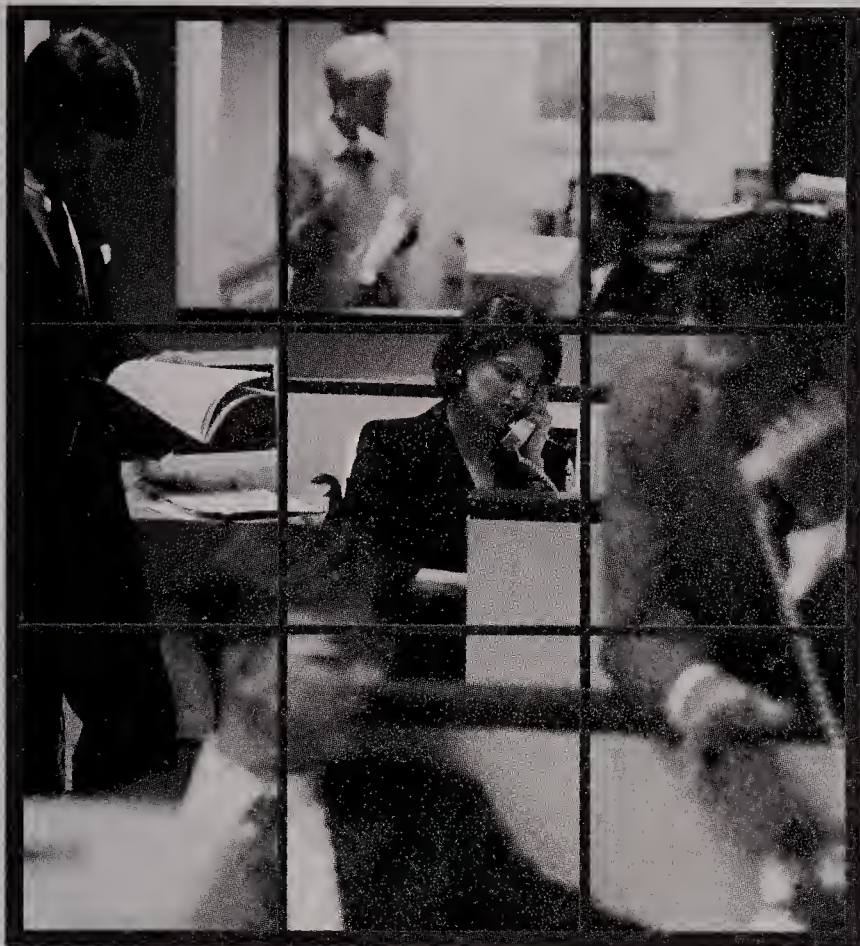
## Growth Strategy

### It Takes a Village

WANT TO BUILD A FAST-GROWING COMPANY? DIVERSIFYING your management team seems to be a good method, according to a recent survey released by Coopers & Lybrand LLP (C&L) in New York City. CEOs of 440 of the fastest-growing companies in the United States filled out C&L's latest "Trendsetter Barometer" survey. Fifty-four percent of the respondents cite having good representation of women and minorities on their management team as important to maintaining business growth. (Of that number, 24 percent found it very important and another 30 percent weighed in with somewhat important.) "CEOs who acknowledge the importance of women and minorities on their management teams appear to be leading the more progressive and productive growth firms," says **James P. Hayes**, partner and director of diversity at C&L. "Compared with other 'Trendsetter' firms over the past 5 years, these companies have grown 22 percent faster and expect to increase their revenues 11 percent faster over the next 12 months." ■







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## Measuring Up

*Can companies measure the return on knowledge management?  
Should they try?*

BY GARY ABRAMSON

**T**HE MORE A COMPANY GROWS, THE GREATER its accumulated knowledge. Or so it ought to be. Yet many successful companies find it increasingly difficult to keep track of just who knows what. They suspect, correctly, that the more complex their organization, the greater the chance that potential value is being lost. Or perhaps misplaced.

These companies realize they must make a special effort to capture and exploit their dispersed knowledge. But this new task of hunting and gathering for business value doesn't seem an obvious fit for any of the standard business departments (though IT may take on a supporting role). This is the logic currently driving a thriving professional specialty made up of new, niche consulting firms, reinvented knowledge management (KM) practices within the established consultancies and the occasional in-house unit at some of the larger corporations. All are aiming to marshal the bits and pieces of knowledge about processes, customers, projects, company history and outside resources that, if made accessible, could be used to add value.

But does KM make financial sense?

Executives who want to spend their company's time and money on knowledge management need to generate financial numbers to back up the obvious logic of the endeavor. Can the CFO pencil the cost savings estimate from knowledge management into next year's budget? Or should the board be banking instead on knowledge management as a long-term strategic asset, analogous to investing in pure research that will someday lead to innovations and increased efficiency. Naturally, there's no consensus. Some experts are willing to calculate bottom-line impact and deliver a dollar-

value ROI for managing your knowledge. Other consultants believe this young management field lacks the sophisticated tools to measure such an apparently esoteric endeavor.

The hard-number defenders in this debate are led by Teltech Resource Network Corp. of Minneapolis, which helps about half the Fortune 500 pull together expertise on technical projects and provides research and content-management services. Teltech combines the use of databases and other IT applications with knowledge analysts who help clients clarify their often-hazy searches for information. Once clarified, a query is routed both inside and outside the client company seeking the information. Then, once a year, each client's senior managers get a report card that shows the ROI of their employees' use of Teltech's service. This—and another Teltech service, the information audit—is one of the industry's rare efforts at quantifiable return on knowledge management (see "Infonomics 101," Page 32).

Defying the conventional wisdom that KM's value can't be measured, Teltech derives the numbers from its clients' own estimates of time and resources saved because of information gained through its service. For example, a client may alter research plans because Teltech's outside experts—retired engineers and other technical workers, consultants and academics—suggest alternatives, wave red flags about upcoming problems or show that the research has already been done elsewhere. One client, an electronics manufacturer, won a costly legal battle against a supplier with Teltech's help, says President and CEO Andrew L. Michuda. One of Teltech's outside experts came up with



ILLUSTRATION BY JAMES O'BRIEN



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# Intellectual Capitalism

the technical proof, via independent tests, to support the client's demand for compensation for allegedly inferior material. Teltech won't provide a specific ROI for that incident, but the client's legal victory "easily paid for the service for life," Michuda says. Teltech boasts an average ROI of 12 to 1 from its services, ranging from 4 to 1 in the transportation equipment industry to 20 to 1 in the chemical industry.

At Warner Lambert Co.'s worldwide consumer health-care research and development division in Morris Plains, N.J., Teltech's service regularly produces an average ROI exceeding the industry standard of 7 to 1, says Charles P. Seeley, systems and applications manager for R&D. To arrive at that figure, Teltech asks Warner Lambert scientists to report productivity improvements as well as capital expenditures they were able to avoid because of information Teltech helped them find. Warner Lambert is the

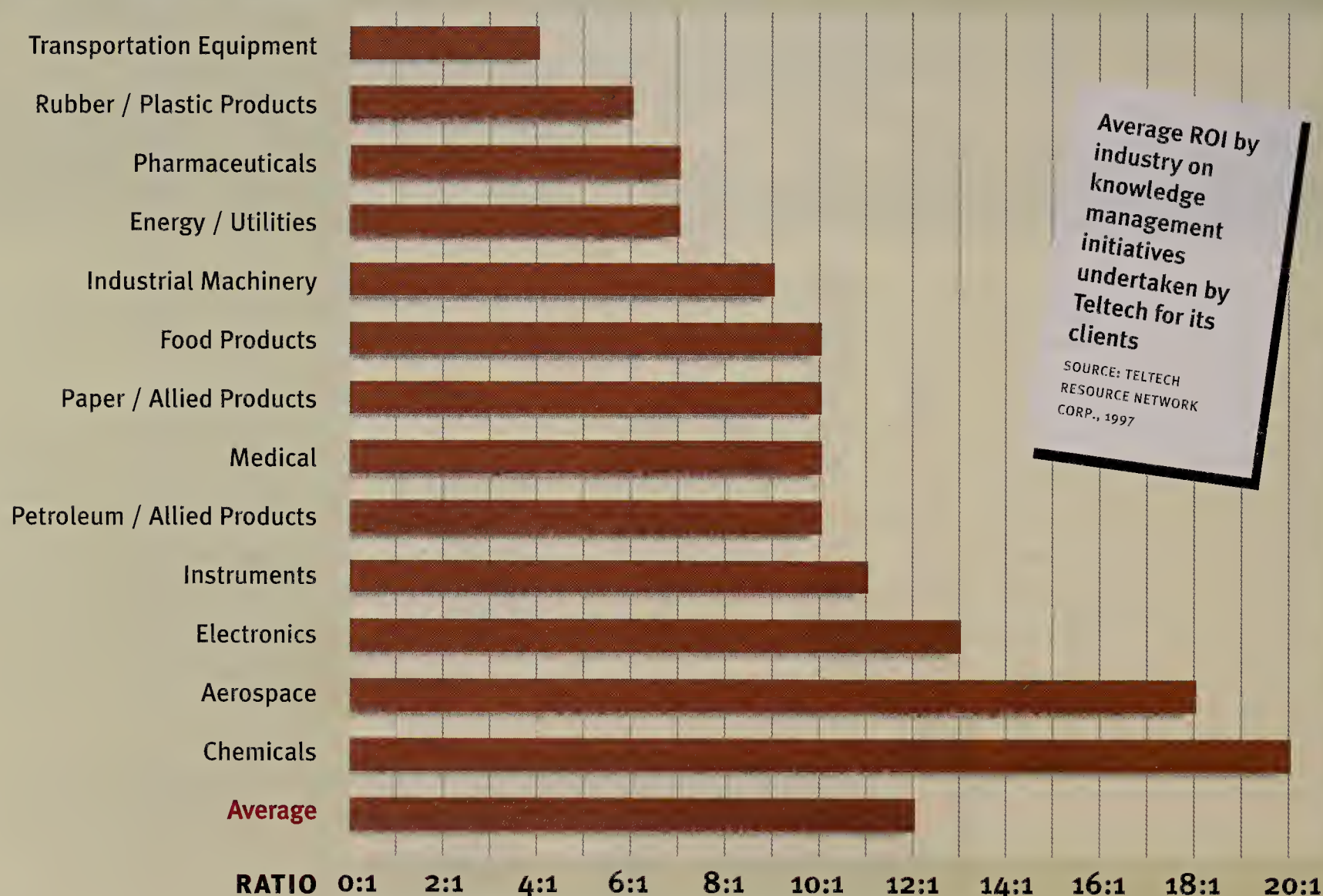
exception among Teltech clients, however, in one surprising way: Company executives like Seeley will talk about the company's experience. "We frequently hear of instances where a knowledge transfer event yielded hundreds of thousands of dollars in savings because of research work aborted due to a discovery that had already been [made] or an expert describing the vulnerability that the client would have if they proceeded down a certain path," says Teltech COO Jack Johnson. But, he adds, "Many of our clients regard us as a competitive advantage, so they don't come forward; they regard it as a vulnerability to reveal what they're learning."

In some cases, companies ask Teltech to audit the value of their acquisition and use of information and knowledge. Michuda has a name for it: infonomics. US West Inc., the Denver-based regional Bell operating company, had Teltech audit its corporate library and informa-

tion services. US West also wanted Teltech to propose benchmarks to enable the company to align its information content investments with IT initiatives and business objectives.

As might be expected, not everyone is a believer. "We are in a knowledge-based society, and I don't think anyone disagrees that measuring [the ROI of] knowledge would be a great thing to do—it would be a sustainable competitive advantage," says Alan Gonchar, president of Compass America Inc. in Reston, Va., the U.S. division of a British consulting firm specializing in metrics. If a company were aware of its strong and weak points in use of knowledge, it could act on that information. But, Gonchar cautions, "The problem with measuring [the use of knowledge] is that no one has come up with an objective way of measuring." Surveys merely provide subjective measurements, he says. Of course many companies would like

## Knowledge Management ROI





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# Intellectual Capitalism

to know how their use of knowledge stacks up against competitors and why some companies leverage knowledge better than others, Gonchar says. "But our answer to our clients is that there really is no objective way to measure it; it is still an academic exercise."

Perhaps precise accounting for the use of intellectual capital is still in its infancy. But some companies have already credited substantial, one-time benefits to savvy use of knowledge. These early successes could point to more general and practical ways to measure the return on intellectual capital. Texas Instruments Inc., for example, thought it needed to build a new plant to increase capacity. The company canceled those plans—and pocketed the \$500 million investment it would have made—when coordination

of its intellectual assets produced an innovative solution to increase capacity within existing facilities, says Kathy Harris, an analyst with Gartner Group Inc.'s knowledge management practice, citing a study done by the American Productivity and Quality Center.

There are also big-picture methods of judging the performance of intellectual capital. A corporation can get a sense of how knowledge management spurs innovation over time by tracking new ideas generated by the program through their life cycle, Harris says. Though it would be difficult to assign a dollar value to the time and effort expended to bring an idea to market, a company could analyze how an idea travels from its originator to a team or supervisor and on to a project team that executes it. It

could then compare the cost of this effort with the value of the product or initiative that the idea generated.

But even practitioners recognize the limits to what can be achieved. "You shouldn't expect to eliminate [operating] costs by knowledge management," Harris says. Michuda says some clients would like to use Teltech's report card to measure the impact of knowledge management initiatives on how long it takes to get a product to market. "We stay away from those broad claims," he says. "To say we alone reduced development time by six months is a fraud. We don't make the claim that we are responsible for the total impact." **CIO**

Senior Writer Gary Abramson can be reached at [gabramson@cio.com](mailto:gabramson@cio.com).

## Infonomics 101

### *How Teltech measures knowledge*

IT'S A SAFE BET THAT ANYONE OFFERING A BUSINESS practice as squishy sounding as knowledge management will eventually come up against a CFO or other senior executive who would rather skip talk of intangible benefits like improved business culture and demand to know about strategic impact and profitability. That is in fact exactly what happened to Teltech Resource Network Corp. "We learned the lesson early and painfully," says Ron Helgeson, vice president of corporate communications. Contracts for Teltech's services are signed by senior management, but the critical reliance on those services is usually at line-worker level. The execs paying for the services don't have a direct view of the benefits. The Minneapolis-based company had to devise a way to measure return on the service in order to survive.

Teltech came up with its own methodology for an annual survey of between 50 percent to 100 percent of a client's staff to measure labor hours and capital assets saved. Called the report card, this surveying and analysis is now outsourced to Volkart May & Associates Inc., also of Minneapolis, to ensure objectivity, says Teltech COO Jack Johnson. Questioners conduct personal interviews to ask, for example, how much time an employee thinks he saved by contacting one of Teltech's 3,000 affiliated experts or by having one of Teltech's knowledge analysts provide information from 1,600 technical and business databases. Want real numbers? A pharmaceutical producer told Teltech it is saving more than \$1 million a year thanks to advice one of its equipment engineers got for filling tubes of ointment more exactly. A biotech firm gave up on a planned licensing

investment after an engineer uncovered key competitive information through an interactive search of scientific literature. Savings: \$1.5 million in projected marketing costs.

For companies that want to take a broader, strategic look at their use of knowledge and information, Teltech has an auditing service that is relatively efficient but comprehensive. The audit begins at the top, identifying the client's key decision-making areas and tasks, and drills down to evaluate the types, level and location of information and knowledge required to support those decisions. Teltech's gap analysis identifies information-weak areas. Most important, the client is guided to select information areas in terms of strategic impact. For example, what should be put first on an internal network or intranet: competitive intelligence or business procedures?

Teltech's knowledge audit, which can take three to four weeks at

one location with, say, 200 to 600 employees, also assesses knowledge-related behavior. For example, how receptive is a client's culture to accessing information electronically? If a company's culture is resistant, Teltech recommends ways of enticing employees onto the system to get access to high-value information. For example, Teltech might suggest linking an underused staff skills directory to frequently used applications like e-mail or customer databases.

Teltech also tackles simpler information management issues—like why row upon row of employees receive *The Wall Street Journal* each day—with an information audit. Solutions can be

as obvious as making *The Journal* available online. Often it takes an outsider like Teltech to detect old habits, such as subscriptions that are no longer relevant or used. Or management may have decentralized control of information access and lost control of costs at the same time. If Teltech can fix those problems, CFOs can celebrate many happy returns, indeed.

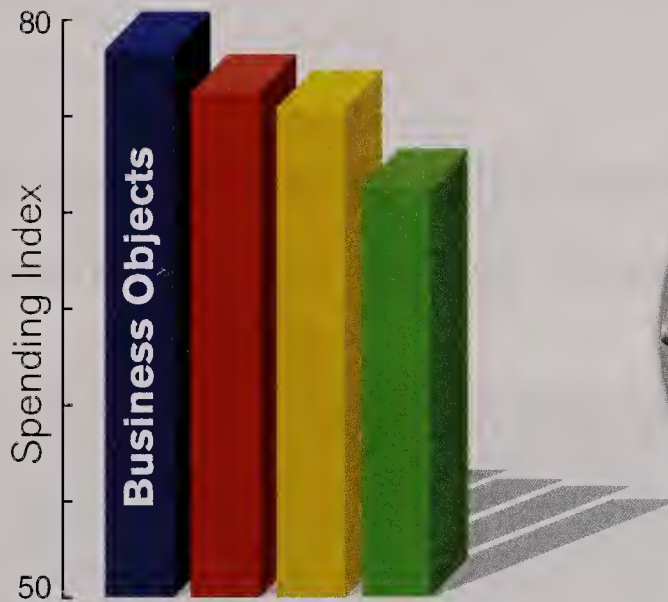
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\*Soundview Financial Business Intelligence Spending Survey, November 1997

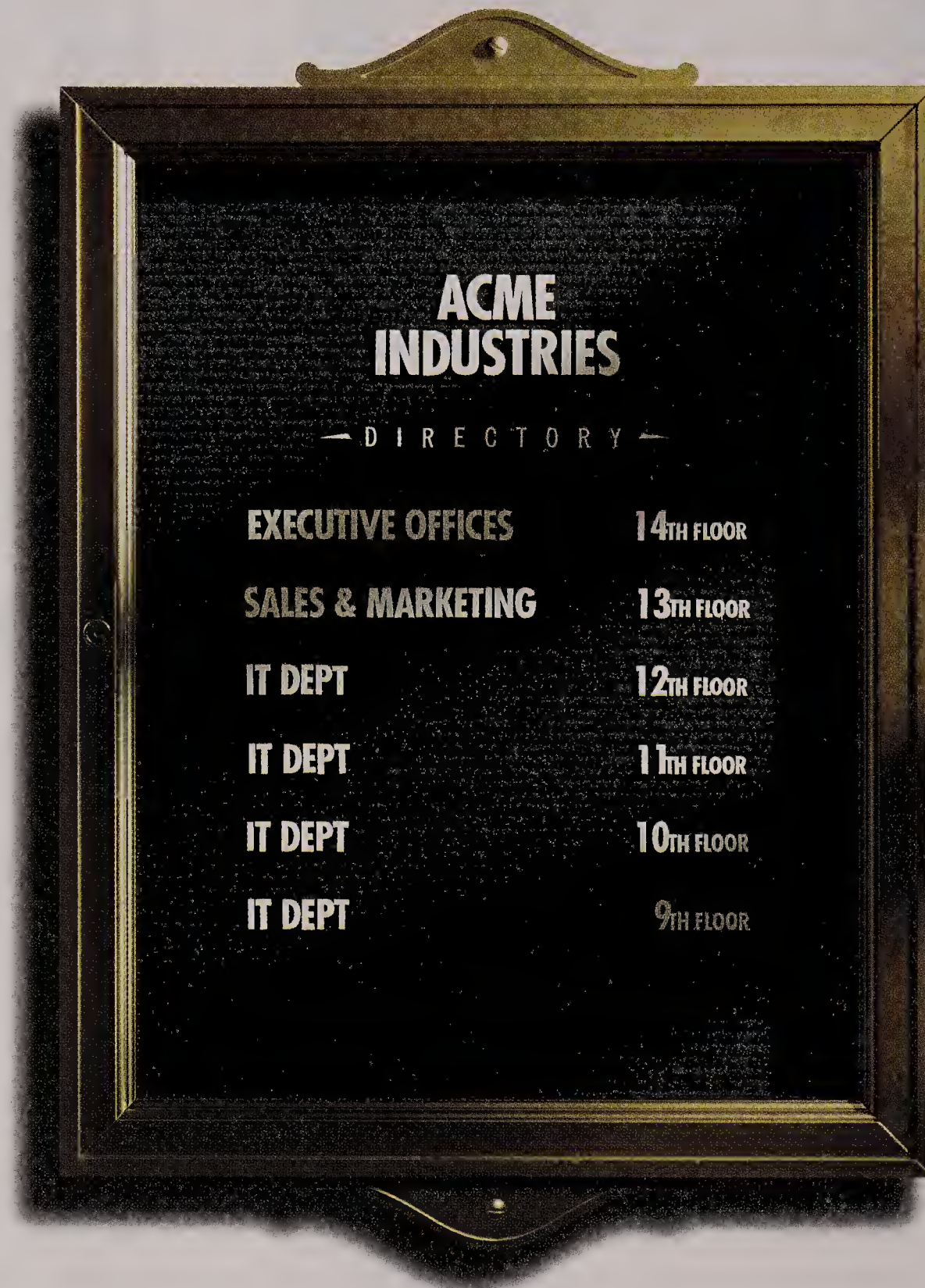
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# Watch Over I.T.

As the information technology  
function becomes more critical to  
business success, so does the  
job of overseeing it

BY JENNIFER BRESNAHAN

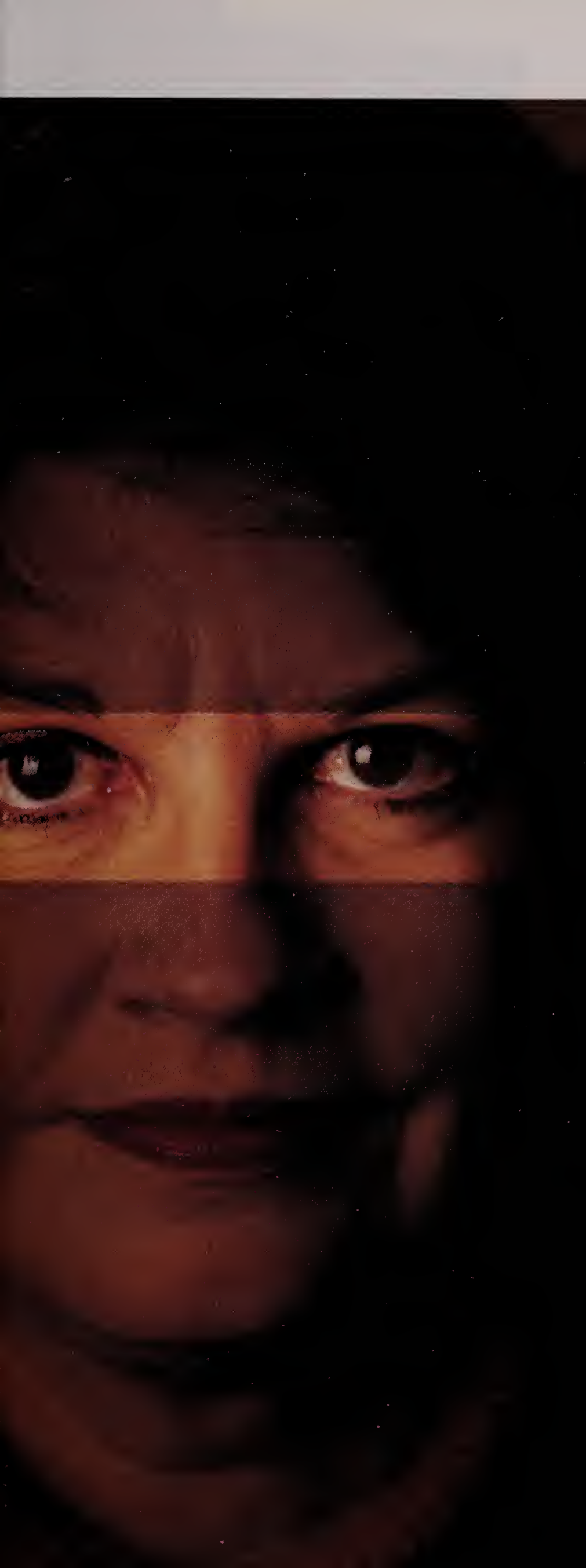
**The world would be** much simpler if employees always met their managers' expectations. Leading employees to desired business results would be as effortless as enforcing dress-down Fridays. Unfortunately, little things like free will, personality differences and communication disconnects tend to get in the way.

As formidable as managing people with the same business background may be, managing the IS department and its chief is even more difficult. Many business executives don't understand technology as thoroughly as they should and harbor a deep-seated distrust of their techy cousins. And the CIO may not always grasp the vagaries of the business. The result is a fine far-rago of stagnation, frustration and missed opportunities.

Yet the rewards are immense for companies that can forge a strong bond between business and IS leaders. Most executives know this, but actually bringing it about is another story. This article examines how five executives handle the crucial task of managing the CIO and the IS function to achieve corporate goals.

PHOTO BY FURNALD / GRAY





# The Integrator

Erasing the line between operations and IT

**Mary Alice Taylor** is corporate executive vice president of global operations and technology at Citibank in New York City. But her duties fall somewhere between the traditional confines of a COO and a CIO. As such, Taylor doesn't merely manage the CIO—she is the CIO. And so much more. Encompassing a whopping 70 percent of the \$3.59 billion financial services company's employees, Taylor's group does everything from making the banking software for a customer's PC to handling all operations, processes and systems that kick in once that customer makes a transaction. (And if the proposed merger between Citibank and Travelers Group Inc. goes through, the IT and operational demands of Citigroup will likely become even more complex.) In other words, Taylor is one busy woman. She's also the embodiment of an enlightened business executive who understands how critical IT is to business success and who includes technology in every strategic decision and conversation.

"When companies separate technology from their operational elements, oftentimes they have a tendency to look at technology for its sake alone as opposed to using technology as a tool to get things done," Taylor explains. "We recognize at the bank that technology and operations are so inter-related that they function much better as a combined activity."

A CPA by training, Taylor focuses on identifying ways to use IT to further the bank's performance. To that end, she places great emphasis on translating corpo-

rate objectives into meaningful and clear-cut action statements for her technical staff. Recognizing that people learn differently, she uses every mode of communication available to get the message across to her department, including hosting chat rooms on the company's intranet, using videoconferencing and holding town hall style meetings around the world.

Taylor structured her department to mirror the rest of the business. Each function and business unit has a representative in Taylor's group. The cash management department, for instance, has a dedicated head of cash in the operations and technology group. "If the business decides it wants to provide a new product, then I have a technology person sitting there who is just as involved with that decision," she says.

"It's a natural expectation that when we sit around discussing market opportunities and delivery mechanisms, technology is part of the overall decision process," concludes Taylor. "I can think of no industry out there any longer that can really [deliver a business solution] without using technology."

## Reader ROI

CEOs, COOs, CFOs—and any other non-IT executives who oversee IT—should read this article to learn

- ▶ How different companies structure the IT/business reporting relationship
- ▶ What strategies are most effective in managing your relationship with the CIO
- ▶ How much non-IT executives need to know about technology



“My role is to clear the hurdles that might get in the CIO’s way.”

—Paul Leech

## The Strategy Coach

Helping IT build credibility as well as strategic systems

Three years ago, Allied Domecq Retailing USA was plying the public with glazed doughnuts and chocolate ice cream more successfully than its competitors. But while customers left Allied’s Dunkin’ Donuts and Baskin-Robbins restaurants satisfied, the IT department’s internal customers were clamoring for more and better service. The former CIO of Allied USA rarely talked with people in operations about business strategy or needs. His staff undermined its credibility by never refusing project requests, even though it already had a long list of projects that would be difficult—if not impossible—to complete. Finally, the company’s lines of business had no common systems and essentially functioned as separate companies.

The arrival of CFO **Paul Leech** marked a turning point for the IT department. Although their lack of technical understanding—and in some cases, their failure to grasp the importance of IT—has caused some CFOs to be less-than-ideal CIO supervisors, Leech has proved to be the exception to this rule. At

Allied USA, the IT department needed the credibility that only an outsider tuned into the business could give it. Now Leech’s challenge is to help IT flourish on its own.

When Leech transferred to the Randolph, Mass.-based subsidiary of the £4.5 billion (US\$7.6 billion) British spirits and food retailer Allied Domecq PLC from Allied’s pub business in England, he immediately set about transforming IT from a service organization into a strategic business partner. He declared that other than a few quick-hit credibility boosters, the department would concentrate almost exclusively on just four projects per year, and he established its first priority—an infrastructure to unite the separate businesses. That task has grown more complex with last summer’s acquisition of the Togo’s chain.

Although Leech was willing to be IT’s ambassador of business

understanding initially, he wanted a new CIO capable of communicating with the business side. He found that in Allied USA’s current CIO Jack Vinchesi. “Jack goes around talking to people to find out what their needs are and then works with them to actually get to the right result,” says Leech.

At first, Leech and Vinchesi spent a lot of time discussing priorities, but Leech subsequently gave Vinchesi almost complete autonomy. “I believe you get the right person in and then allow him or her to do the right job,” says Leech. “My role is to clear the hurdles that might get in his way.” For



PHOTO LEFT BY FURNALD / GRAY; RIGHT BY KENT HANSON



# The Customer's Advocate

## Keeping the focus on customers

All companies cherish their customers. But few take their ardor to the obsessive lengths that Cisco Systems Inc. does. The \$6.5 billion Internet networking vendor hinges its competitive strategy on striving to provide the best customer service in the industry. So it's no great leap that the senior vice president of customer advocacy, **Douglas C. Allred**, would have jurisdiction over the IS function. This sort of arrangement—where the CIO reports to the head of a line function—is rare and could cause the CIO to neglect other departments' IT needs. But when the line function corresponds with an organization's core competency, as it does with Cisco, it can work.

Allred's goal is to keep the IS department and CIO Peter Solvik always thinking about the customer.

Allred mandates that even internal systems must somehow benefit consumers. When the IS department started developing a tool to help Cisco employees keep track of customers' orders and answer their technical questions, for example, Allred pushed them to consider what it could do for consumers. His input led the IS group to go beyond creating a database for purely internal use and make the tool available on the Web so that customers could benefit from it. Today,

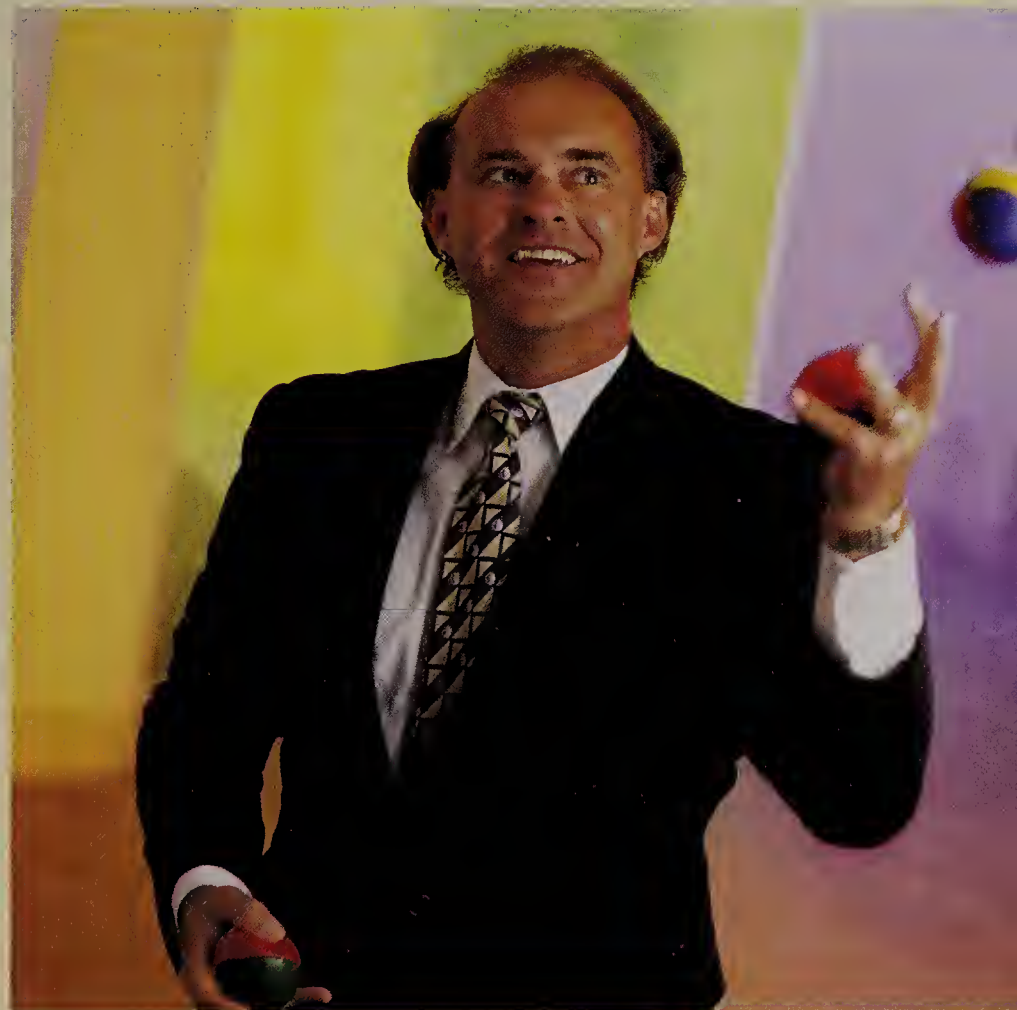
customers can order online, download software and get answers to technical questions over the Web.

In addition to boosting customer satisfaction, the tactic of putting customers first has saved the San Jose, Calif.-based Cisco at least \$290 million a year in operating costs. It has done so by reducing shipping and handling costs, decreasing ordering

errors and minimizing recruiting expenses. Cisco has also reduced the number of personnel needed to answer basic questions, freeing them up to provide higher-level technical support.

Solvik's ability to consider Cisco in terms of its customers, finances and products clinched Allred's decision to hire him, says Allred. As a result, Solvik doesn't require much hand-holding from Allred, other than a quarterly review and lots of informal collaboration. "Never a week goes by that Pete and I don't at least share several messages," says Allred. "We probably meet a couple of times during the month on various topics, and we're in communication constantly."

Allred and Solvik promote a decentralized approach to initiating and funding IS



projects. The business managers in charge of each function choose and fund their own technology initiatives. "I wouldn't hold the CIO accountable for how much to invest in IT or even in what to invest in general," says Allred. "I would hold the CIO accountable for making the right technology choices to build a viable platform that can cost-effectively deliver."

instance, Leech arranges meetings with the executive management team to allow Vinchesi to give updates on IT plans. And he acts as the "bad cop" when business constituents want something IT can't deliver.

Leech evaluates Vinchesi's performance by how effectively he reaches out to the business. "Our head of operations recently said, 'Jack is a person who I most like to listen to because he tells it like it is.' That's exactly what I want to hear," explains Leech. "If [the business] doesn't realize that IT's doing a good job, then we're not doing a good job."



## Best Practices in IT Function Management

- Ideally, hire a CIO who understands **finance, marketing** and other **business functions**
- Mentor the CIO as necessary in **business issues** and **language**
- Establish **open communication** with the CIO
- Translate **business objectives** into **clear-cut action statements**
- Learn the **basics** about information technology and its **applications** in business
- Consider **technology** in every business decision
- Facilitate **communication** between the **CIO** and other members of the **executive committee**



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## The Communicator

Treating IT as a critical success factor

In his first week on the job as CEO of Masco Tech Inc., **Frank Hennessey** arranged a meeting with the company's head of information services. Although the CIO doesn't report to him,

Hennessey nevertheless makes it his business to communicate directly with the CIO—and to incorporate technology into every conversation about corporate strategy. "I don't believe in pure hierarchy," he says. "People who are committed to common goals and objectives interact constantly. What's on a piece of paper is unimportant."

Hennessey eschews the formal reporting structure, which has the CIO reporting to the CFO, because he realizes that the success of Taylor, Mich.-based Masco Tech, a \$1.7 billion automotive and industrial products manufacturer, depends on the wise use of IT. "It's through focus on systems that you're able to reduce costs, eliminate redundancies and understand fully and completely the implications of the decisions you make," says Hennessey. "Information systems will be an integral part of all that we are and all that we do."

Hennessey has no intention of delegating technology decisions.

He plans to stay in close contact with the IS group, just as he did in his previous job as executive vice president at Masco Tech's parent company, Masco Corp., a \$4 billion building products manufacturer. "My style is to pick up the telephone or walk over to the operation on an impromptu basis just to make inquiries like, 'What obstacles are you up against? What accomplishments are you particularly proud of?'" he says.

In addition to many informal conversations, Hennessey chaired monthly information systems meetings for Masco Corp. business function managers and asked the director of IS for monthly activity reports. Hennessey also encouraged the IS department to participate in companywide strategy and team-building exercises.

"I have a hard time understanding how anybody wouldn't get the absolute criticality of IS in running the business," says Hennessey. "No matter what you're talking about today, you can't speak without speaking about IS."



PHOTO LEFT BY ROB JOHNS; RIGHT BY BOB SCHATZ



# The Interpreter

Making sure IT and business executives understand each other

CURTIS WARFIELD, CFO of Columbia Healthcare Network, admits there was a time when he'd rather have "hurdled a porcupine than learn about a server."

In their honest, unguarded moments, most CFOs would voice similar opinions about technology. Which explains why CIOs and management experts have argued that companies should abandon the traditional CFO/CIO reporting structure in favor of a direct relationship between the CIO and the CEO or COO. The difference between Warfield and his CFO brethren, however, is that he has made it a point to become fluent in the language of technology, and he translates between the CEO and CIO as necessary to be sure IT meets business needs.

Warfield puts his interpreting skills to work managing the IS function at Brentwood, Tenn.-based Columbia Healthcare Network, the subsidiary of Columbia Healthcare Corp. that mobilizes physicians into cooperative groups. Prior to a major corporate restructuring that coincided with Warfield's arrival in August 1997, the vice president of MIS reported directly to the CEO. This MIS director had difficulty discussing IT projects in terms of financial costs and bene-

fits. That experience, coupled with his desire to reduce the number of his direct reports, persuaded the CEO that the new director of MIS, Lori Greyerbiehl, should report to Warfield, the new CFO. "It doesn't really matter [who] the CIO reports to," says Warfield. "The most important thing is that MIS and the business strategy have a correlation."

Greierbiehl's promotion from the IS ranks to director of MIS was intended to preserve continuity and morale. But her strengths, like those of her predecessor, were in the technical arena. As Greierbiehl's manager, Warfield helps her learn about and focus on the business. He keeps her in the loop about what's discussed in business strategy meetings and invites her to attend when appropriate. As she envisions and implements IT solutions, Warfield constantly pushes her to think about payback.

But the learning is not all one way. Several years ago, Warfield realized that he could have much more impact on the business if he understood technology. He was tired of not comprehending IT purchase requisitions that came to his desk for approval. His resolve was cemented when his previous employer, a major managed-care company, nearly lost a multimillion-dollar contract because its systems crashed during a demonstration. So Warfield changed his attitude toward IT. He now reads voraciously about IT, attends conferences and tries to benefit from Greierbiehl's expertise. The two pore over visual diagrams, flow charts and models until he understands the technical concepts. He examines equipment and queries her on how it works and how it relates to Columbia's overall business

plan. "If I don't understand something, I make her break down the jargon into layman's terms," he says.

"It's the IT systems that are going to make or break us," Warfield continues, citing Oxford Health Plans Inc.'s recent trouble as proof of the need to stay on top of IT. Snags

in Oxford's computer systems reportedly cost the company millions of dollars and precipitated the CEO's departure. "A lot of CFOs are going to school on that example. You can no longer view IT as a black hole like I used to." **CIO**

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Senior Writer Jennifer Bresnahan can be reached at [jbresnahan@cio.com](mailto:jbresnahan@cio.com).





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**Reader ROI**

CONVERGENT BILLING SOUNDS simple, but many snags lie between concept and execution. Read this article to learn

- ▶ How a once-mundane operational process can take on strategic importance
- ▶ Whether your current technology can create a convergent bill
- ▶ What regulations might affect your convergent billing plans

# This Bill's *for* You

*The traditional bill is becoming a thing of the past. With convergent billing, many companies are finding new ways to transform invoices from monthly nuisances into featured attractions that market new products and maintain customer loyalty.*

BY CAROL HILDEBRAND

I CAN'T SAY I'M THRILLED WHEN THE LONG-DISTANCE phone bill lands in my mailbox, but I do have to admit to a mild spark of interest. That's because my long-distance carrier, Working Assets Long Distance (WALD), uses its bill as far more than an invoice. Sure, I'll find a list of the phone calls I made and a request for payment, but accompanying the bill is a small newsletter's worth of information about how members of Congress are voting on environmental and social issues. I can choose to have Working Assets send advocacy letters (in my name) to them

on a number of different topics. I can also help fund 40 non-profit groups, such as Ecotrust and the NAACP, by checking off a box that rounds up my bill to the nearest dollar. Best of all, each year Working Assets donates 1 percent (about \$3 million for 1997) of its revenue to those same advocacy organizations.

WALD's phone bill beautifully illustrates how smart companies are transforming their billing function from cost centers to strategic devices in the ongoing quest to build long-term customer relationships. And when done right, it works:



## BILLING STRATEGIES

Because Working Assets supports causes I care about, I'm particularly loyal to this company (note to AT&T, et al.: Don't call). The bill serves as a monthly reminder why.

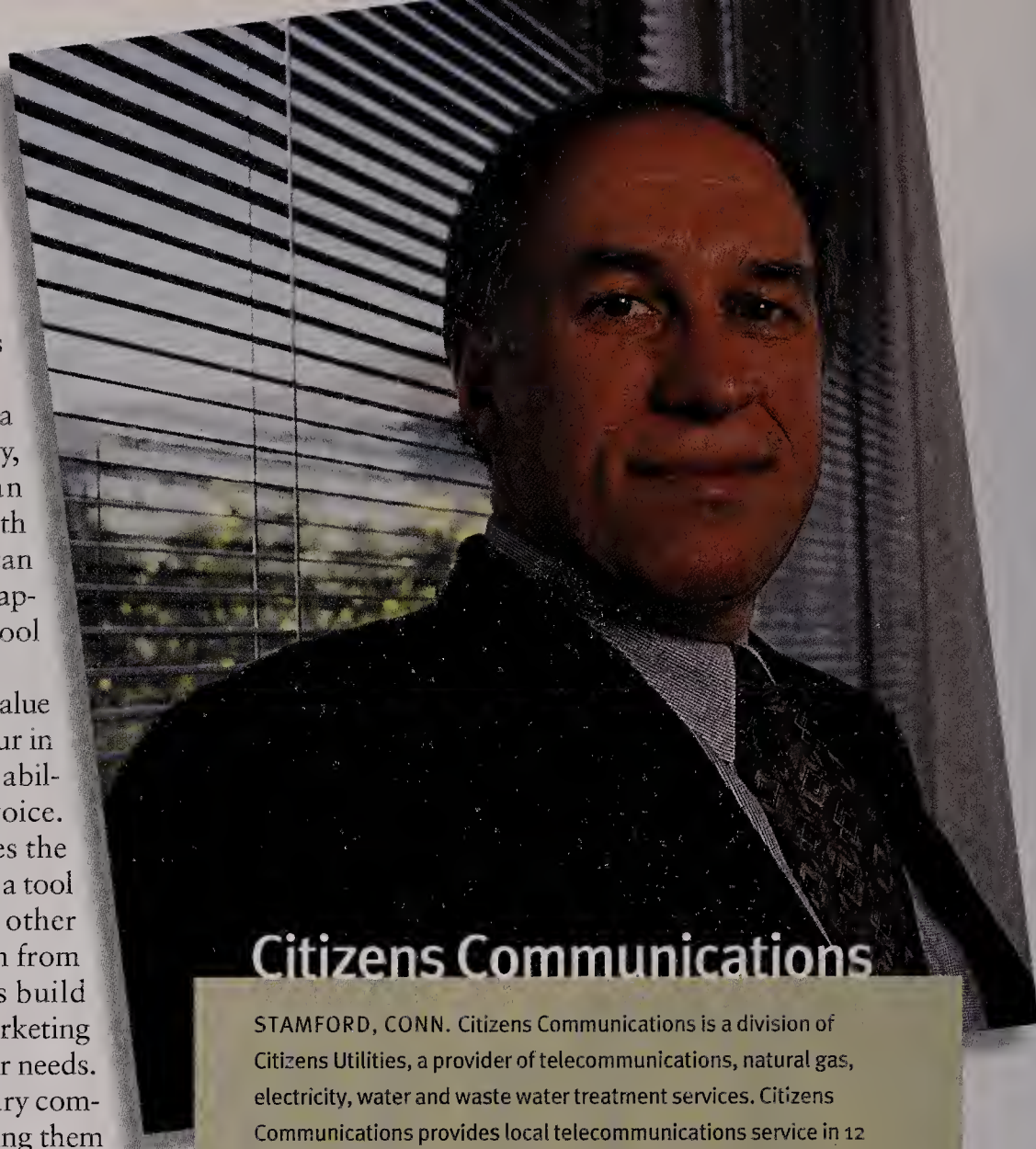
"We barely view it as a phone bill," says Laura Scher, chair and CEO of WALD's parent company, Working Assets Funding Service Inc. in San Francisco. "It's a piece of mail you get every month that tells you, the concerned citizen, what you can do about certain issues. And all this information happens to be in a phone bill. It's a very important tool for us."

WALD isn't the only company to discover the value of a bill—convergent billing is becoming de rigueur in certain industries. The term originally meant the ability to bill more than one service on a single invoice. Now, however, convergent billing encompasses the much larger concept of using the monthly tally as a tool to keep customers happy and to cross-market other products. And combining customer information from disparate systems into one bill lets companies build detailed customer profiles that help them aim marketing pitches at that consumer's or business's particular needs.

In addition, the convergent bill acts as a primary communications vehicle for many companies, allowing them to strengthen their customer relationships and build brand loyalty, says Kenneth M. Morris, president of the New York City-based consultancy Siegel & Gale Inc. For example, he points out, "If a company bills several services to one customer, it can start to apply discounts across the range of services. This extends the relationship and gives the customer a good incentive to stay."

"It's more than convergence billing. It's convergence around customer care and servicing aspects as well," says Rod Mack, executive vice president of products and services at EnergyOne LLC in Kansas City, Mo. And for many companies in the service sector, customer satisfaction is one of the few ways left to differentiate yourself from your competitors. Price? The company down the street will undersell you in a heartbeat. Better technology? In six months your competitors will have the same stuff. For better or for worse, companies in industries such as telecommunications and banking find that they are selling commodities. "The majority of the telecom industry, for example, is more than a century old, and it's a fairly mature market," says Boyd C. Peterson, director of consumer communications for The Yankee Group, a Boston-based research company. "The only differentiation beyond price is that of customer service and customizability. If you have a flexible enough billing system, you can go into each client and put together a package that is unique to that customer. You get a real leg up on incumbents who can't do that. You don't have to say, 'I'm just like them, except cheaper.'"

Customer care offers the hope that successful practitioners will wear more arresting stripes than the rest of the corporate zebras in the herd. "Everybody's thinking about doing this because nobody wants to lose that edge with the customer," agrees Morris. "It's changed the whole nature of what these documents can do."



### Citizens Communications

STAMFORD, CONN. Citizens Communications is a division of Citizens Utilities, a provider of telecommunications, natural gas, electricity, water and waste water treatment services. Citizens Communications provides local telecommunications service in 12 states to about 1 million customers.

- **Convergent billing is being driven from the sales and marketing departments, which want to be able to roll out new products and services ahead of the competition.**
- **The current legacy billing system is woefully inadequate—it's inflexible and provides boilerplate bills. "We want to implement competitive products and do it quickly and cheaply and provide good quality. The billing systems we have today can't support any of [those goals]."**
- **Ultimately, the company would like the billing system to service both the phone and utilities divisions of Citizens Utilities, providing one bill for gas, electric, water and phone, and one point of contact for service questions.**

**"Not only will the CONVERGENT PLATFORM support flexible billing, but it will also support customer service, and we think the integration of CUSTOMER CARE AND BILLING is important."**

*—David Schutzman, former vice president of information services*

Companies can also use their bills as effective cross-selling tools, says Richard P. Nespola, president and CEO of The Network Management Group Inc. (TNMG), a global consultancy based in Leawood, Kan. "If AT&T mails a bill for long distance, it can also offer tie-ins and promotions for other products like Internet service," he says. "People have a higher propensity for reading invoices than bulk mail."

For example, Citizens Communications, a telecommunications firm based in Stamford, Conn., is adding a con-



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## BILLING STRATEGIES

vergent billing engine to its billing systems so that it can quickly put together sales and discount packages based on consumer calling patterns. "We can take advantage of the ability to produce one bill and package many products and services together as well as offer cross-product discounts," says David Schutzman, Citizens' former vice president of information services (now senior vice president and CIO at e.spire Communications Inc. in Annapolis Junction, Md.). "By analyzing the user data [collected by the billing system], we can offer discount plans" tailored to each consumer.

But while the concept of a bill that does more than demand money sounds great, implementing such a scheme is a vastly different kettle of chowder. Companies exploring the concept of convergent billing have stirred up a host of business, technical and regulatory issues. (And the possibility of billing over the Web adds new spice to the pot.) A quick look at some of the convergent billing issues being raised in deregulated industries like utilities and telecom reveals some of the stickier wickets facing seekers of harmonic bill convergence.

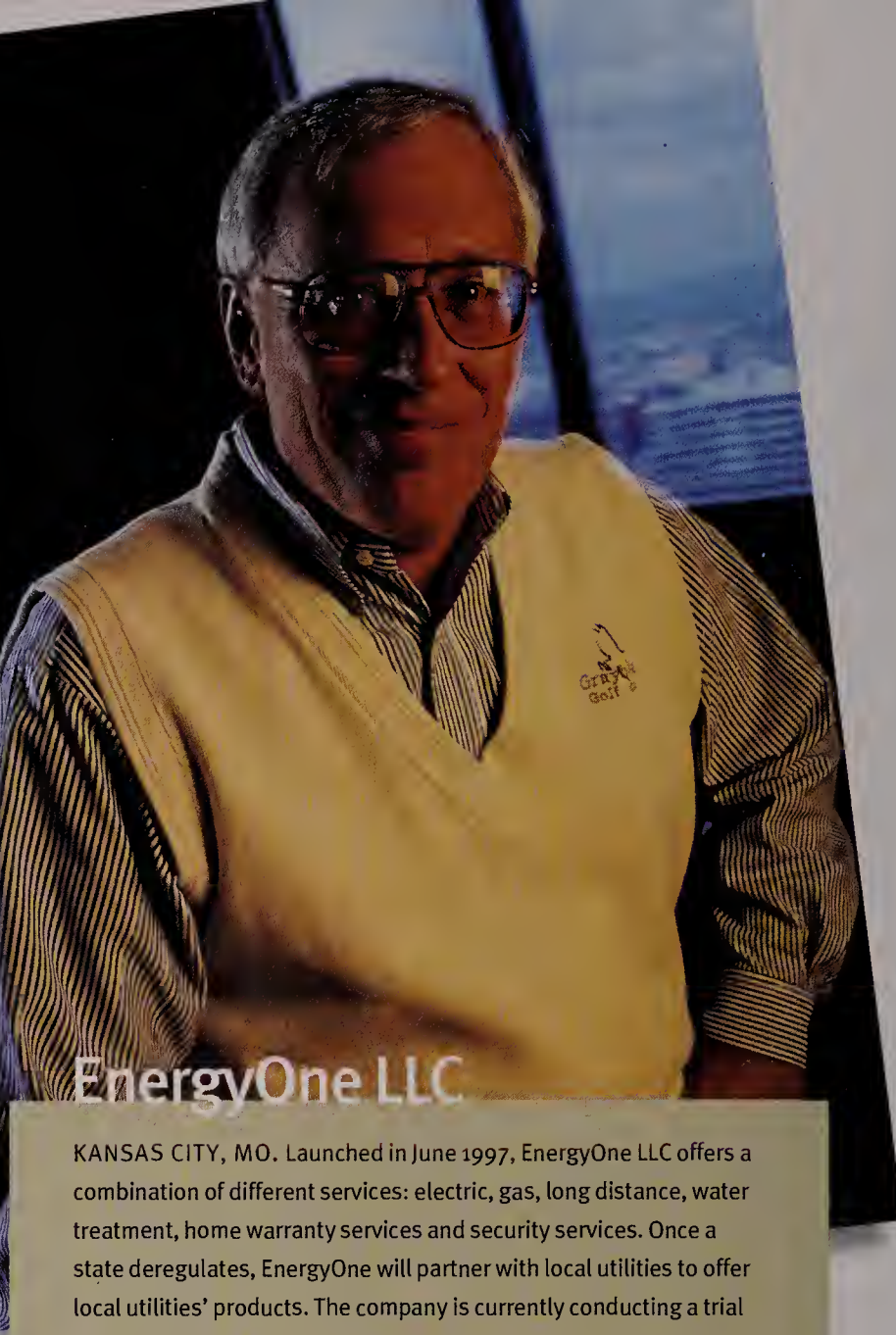
### Aggregation: The Brands Who Would Be King

Simply put, the issue is this: You, the customer, would be tickled to have, say, gas, electric, phone and water combined on one bill. They, the companies, would be tickled to offer this service, correct in their notion that many consumers would prove loyal to such a lovely, convenient offering. But who's going to send that one bill? Everybody wants to because whoever sends the bill gets to build both customer relationships and brand-name recognition. That's when the problems start. "It seems mundane, but it cuts to a fundamental issue," says Yankee Group's Peterson. "There is no other manifestation of a service provider other than a bill. Companies know that if they keep the billing, they get to communicate with you every month. And they'd all like to be the company that has the relationship with the customer."

Giving up control of a bill also means relinquishing control over a corporate brand, Morris points out. "Individual brands are very concerned about giving up this function, even though it was previously a cost center," he says. In fact, AT&T yanked its billing information from the invoices of local carriers such as Bell Atlantic and Southwestern Bell in order to build its own brand-name bill, says Morris. In other words, nobody will agree to be the aggregatee.

But as service providers engage in this contest of who blinks first, some firms are doing an end-run around the situation by aggregating a range of services on a single bill that streamlines payment for consumers.

Aggregators can be companies like utilities or phone companies that can logically combine services on one bill. Or they can be companies that offer a number of subcontracted products but don't actually produce any particular service. "There's a tug of war between companies that do not necessarily pro-



KANSAS CITY, MO. Launched in June 1997, EnergyOne LLC offers a combination of different services: electric, gas, long distance, water treatment, home warranty services and security services. Once a state deregulates, EnergyOne will partner with local utilities to offer local utilities' products. The company is currently conducting a trial in Pennsylvania of 75,000 homes.

- The company aims to help utilities survive deregulation. "We're trying to help utilities become retail companies. Utilities can sign up with us as a licensee or franchise and get access to our infrastructure, bundle of services, the EnergyOne brand and the end-to-end processes needed to run retail. They don't exist in utilities."
- EnergyOne acts as a merchandiser of different services, so in essence the company's main product is a bill. Convergent billing is vital to its success.
- The company will offer one-stop shopping to consumers. "As deregulation occurs, users are **LESS LIKELY TO SWITCH SERVICES** if they're buying something else from you. There's a stickiness to bundled products. It's a lot easier to buy from **ONE CHANNEL.**"

*—Rod Mack, executive vice president of products and services*

duce a specific product and product generators that want to have control of their billing," says Morris. "The battle is ongoing, and it's unclear how it's going to pan out."

EnergyOne, for example, has "extended beyond the MasterCard model of the telecom industry," says John Hart, vice president of marketing for convergent billing vendor Saville Systems in Burlington, Mass. EnergyOne includes cross-product discounting and customer care information for all of the services listed on the bill. A joint venture of two utilities, Philadelphia Energy Co. (PECO) and UtiliCorp United Inc. in



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## NEW YORK STOCK EXCHANGE

| Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  | 52-Week |  |  |  |  | Yld |  |  |  |  | Sales |  |  |  |  |
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## BILLING STRATEGIES

Kansas City, Mo., EnergyOne sells packages of services to consumers and businesses. The company offers electric, gas and long-distance services as well as GE home warranty and ADT security services. All these items will be properly branded on the bill; for example, the electric will bear PECO's logo and the long distance will carry AT&T's logo. Mack says co-branding lets EnergyOne take advantage of a "trusted local brand, while at the same time linking with [EnergyOne's] national brand."

Aggregators are also appearing online as Web billing becomes more popular. Online aggregators today include companies such as Microsoft Corp., Intuit Inc. and banks that have Web sites that allow users to pay their bills. Service providers face a dilemma, says Morris. By allowing customers to pay a bill on another company's Web site, "They sacrifice the customer relationship. On the other hand, online billing offers convenience," which is a big selling point for many customers, says Morris. "Sooner or later, customer demand will compel these companies to play."

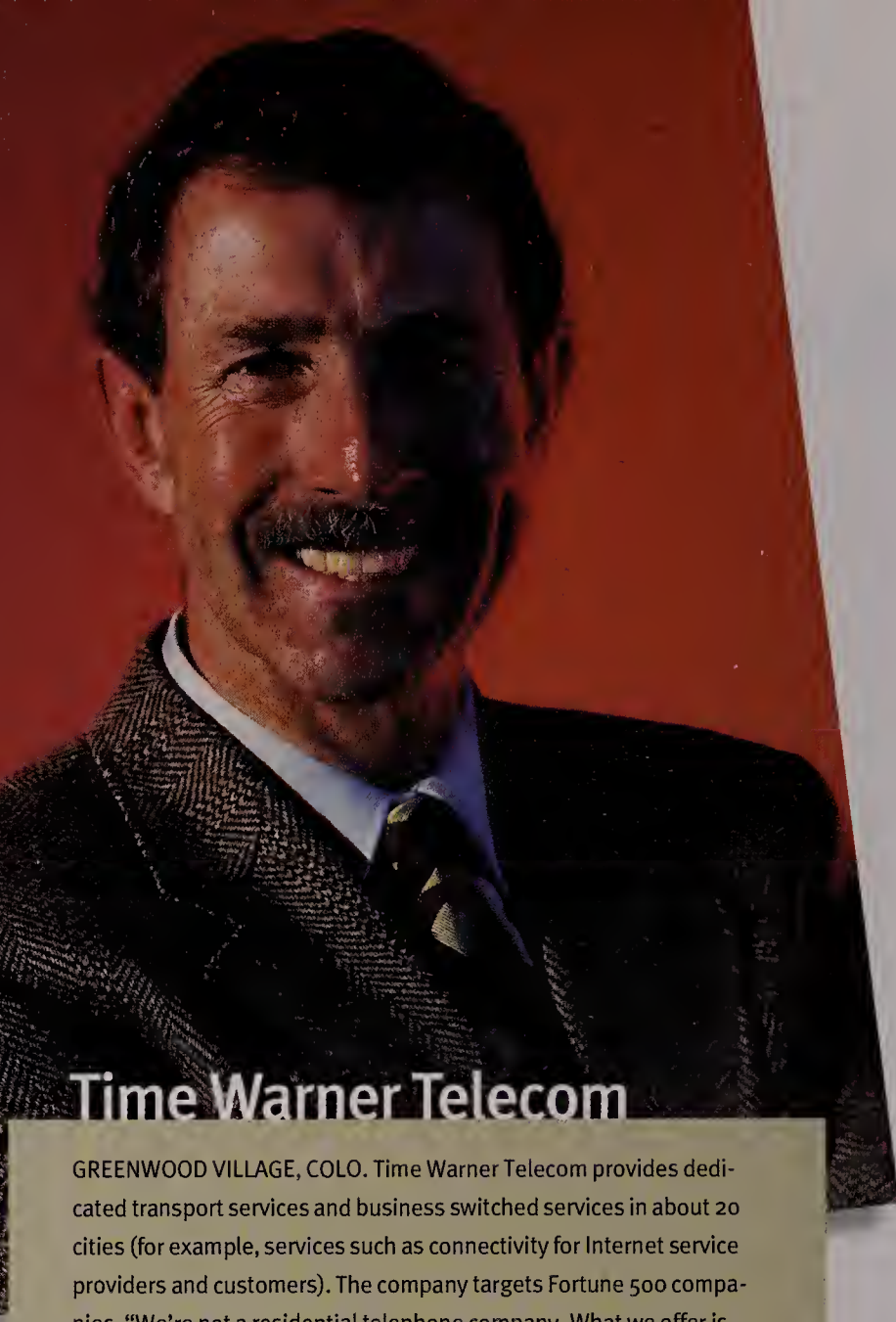
The sooner-or-later part varies by customer segment, however. Companies have pursued business-to-business online billing for years because it saves money and time. Morris notes, however, that consumer online billing is in its infancy. "Con Ed tried it and had minimal response. Online billing means that people have to be proactive about paying their bills. It's much easier to get a statement in the mail," he says.

### Teaching Old Technology New Tricks

Surprise, surprise: As with many trends, technology is both the boon and bane of convergent billing. Were it not for the ability of technology to track and combine differing streams of customer data, convergence would still be a lunatic gleam in some futurist's eyeball. But the incumbent systems at big companies like MCI, AT&T and the regional Bells also present stubborn implementation bottlenecks, says Peterson. His rule of thumb is the bigger the company, the more tangled its billing system. Many telecom companies' billing systems are specifically designed for their vertical industry and are not easily portable to others. For example, Peterson points out that a cable company's bill is fee-based and fairly simple to compute. A long-distance company, on the other hand, "is transaction-based. For every phone call, the company has to keep track of things like to whom the call was made, how long it lasted and how far away it was. It requires a complex billing engine," he says. And many of these engines are elderly legacy systems that do not adapt well to change. "The back-office stuff is pretty frightening," says Peterson. "The bigger the company, the less likely it is to talk about billing because it really is bad."

"AT&T has convergent billing in its dreams," says Daniel A. Taylor, managing director of global telecom research at Aberdeen Group Inc. in Boston. "It's been talking about offering a single bill [for its services], but the company seems to be stuck in its legacy systems."

What's more, newer competitors with no old systems bag-



### Time Warner Telecom

GREENWOOD VILLAGE, COLO. Time Warner Telecom provides dedicated transport services and business switched services in about 20 cities (for example, services such as connectivity for Internet service providers and customers). The company targets Fortune 500 companies. "We're not a residential telephone company. What we offer is dedicated transport, point-to-point switch service."

- The company used a convergent billing system from the get-go to gain an advantage on competitors saddled with older legacy billing systems.
- The billing system was introduced in August 1997, and the first bills were sent in January 1998.
- Currently, Time Warner is developing a long-distance product; customers who choose long-distance, switch services, and data and video communication products from Time Warner will receive one bill for all services.

"It's about customer service and marketing, and it's also about accuracy and reliability. We want to create **GOOD, SIMPLE BILLS** that can be easily adapted to customer needs."

*—Graham Powers, senior vice president of engineering and technology*

gage get even more of a head start by buying convergent billing systems from vendors such as Saville Systems and Kenan Systems Corp. No matter how many services a customer wants to buy—long distance, Internet access, wireless and local service—the billing system will merge them onto one bill. Such systems are also flexible enough to accept new products and services without an enormous hassle. And after all, Taylor points out, "You can offer all the new services you want, but if you can't bill for them, what's the point?"

Graham Powers, senior vice president of engineering and



Y2K Program Directors —

# A Year 2000 Warranty: How will you provide one?

THURSDAY  
9<sup>TH</sup>  
SEPTEMBER  
1999

FRIDAY  
31<sup>ST</sup>  
DECEMBER  
1999

SATURDAY  
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JANUARY  
2000

TUESDAY  
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technology at Time Warner Telecom in Greenwood Village, Colo., bought a convergent billing system from Saville to help gain an edge on the competition. Time Warner sells switching services to Fortune 500-size companies, and Powers says his company needed a way to quickly add new products and services onto the bill but didn't want to devote the time and money to building a system in-house.

"Regular billing services tend to be inflexible as far as the ability to tailor the system to accept new products," Powers says. But as a new entrant to the switch service market, Time Warner wanted to be able to personally tailor its services to each customer's needs. "You need convergent billing to do that flexibly and rapidly," he says. "Having a billing platform that does this for us is a huge advantage."

### Playing by the Rules

Banking, telecommunications and utilities are all eagerly exploring convergent billing as a competitive advantage in a deregulated world, but there are still constraints that affect to some extent their ability to converge. Yes, deregulation has occurred, but that doesn't mean all regulations have disappeared. AT&T, for example, can hardly offer convergent services of long distance and local service if it can't offer local service, and many other carriers, particularly the local Bell companies, also struggle with the fallout from deregulation.

Utility deregulation differs by state, making it difficult to implement an integrated billing strategy, says Citizens' Schutzman. "Conceivably, you could do some type of cross-product discounting and packaging within the bounds of regulations," he says, "but it would all be constrained by whatever regulatory environment is in each particular state."

Cross-industry convergent billing is subject to similar requirements. For example, Working Assets' Scher says her company offers a credit card as well as phone service but must bill the two separately to satisfy banking regulations. "It would be very difficult to combine the billing," she says. "The rules governing the banking industry are not simple, and we must offer our credit card through a bank." So although WALD does offer one bill for all its phone services, its credit card bills remain separate.

For consumers and businesses alike, the roadblocks that slow the rapid implementation of convergent billing can be frustrating. But give it another couple of years, says Aberdeen's Taylor, and convergent billing will move from business option to competitive requirement. "If you're a progressive company, you're clearly thinking about convergent billing. If you don't invest [in it], you're going to be thoroughly bypassed." **CIO**

Senior Editor Carol Hildebrand can be reached via e-mail at [cjh@cio.com](mailto:cjh@cio.com).

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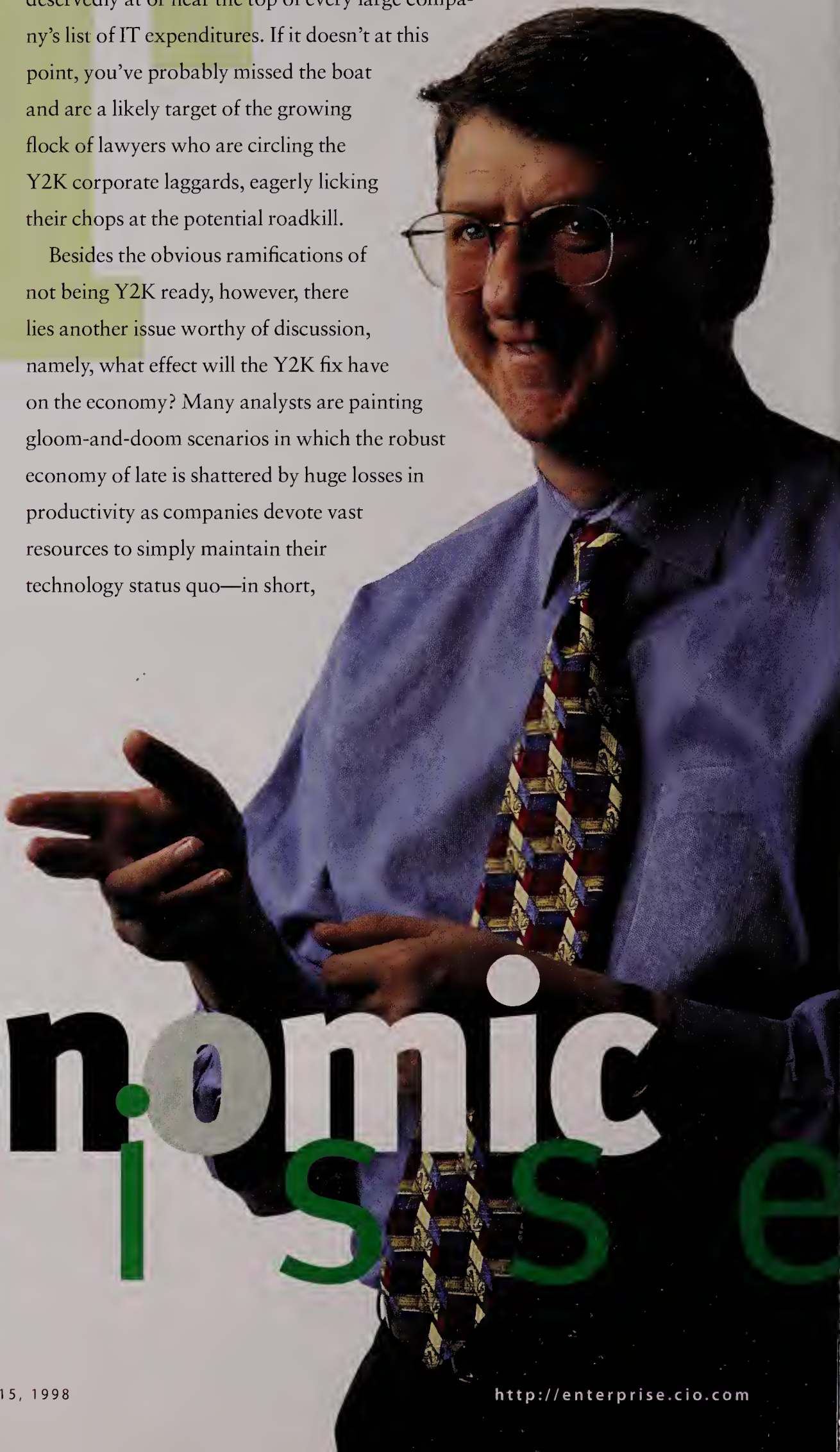


The year 2000 (Y2K) fix stands deservedly at or near the top of every large company's list of IT expenditures. If it doesn't at this point, you've probably missed the boat and are a likely target of the growing flock of lawyers who are circling the Y2K corporate laggards, eagerly licking their chops at the potential roadkill.

Besides the obvious ramifications of not being Y2K ready, however, there lies another issue worthy of discussion, namely, what effect will the Y2K fix have on the economy? Many analysts are painting gloom-and-doom scenarios in which the robust economy of late is shattered by huge losses in productivity as companies devote vast resources to simply maintain their technology status quo—in short,

**Could the Y2K bug drag the economy into a recession? Or are its potential deleterious effects on the economy overblown? Three leading economists offer sharply contrasting views.**

# Economic Dissension







to survive. And then there are companies whose computer systems will fail in year 2000, which could cause an economic downturn as those companies lay off employees or worse, go bankrupt. However, not all Y2K observers think The Big Fix will automatically lead to an economic downturn. To further explore Y2K's effect on the economy, *CIO Enterprise* convened a virtual roundtable of three leading economists. Garth Saloner is currently one of the principal researchers on a major study of the worldwide computer industry funded by the Sloan Foundation. Stephen S. Roach oversees a team of 15 economists at Morgan Stanley Dean Witter & Co. in New York City. He recently served on a National Academy of Sciences committee that examined the impact of information technology on the performance of the U.S. service sector. Edward Yardeni has spoken and written frequently about Y2K. He testified before Congress in 1997 in support of mandating that publicly traded companies disclose the state of their Y2K readiness. Each economist was interviewed separately, then given the opportunity to respond to the others' viewpoints; the responses are in italics.

**STEPHEN ROACH** (top) is chief economist, director of global economic analysis and a managing director at Morgan Stanley Dean Witter & Co. in New York City.

**GARTH SALONER** (left) is Robert A. Magowan professor of strategic management and economics at Stanford University Graduate School of Business in Palo Alto, Calif.

**EDWARD YARDENI** (right) is chief economist and a managing director of Deutsche Morgan Grenfell in New York City.

mission



## CIO Enterprise: How will the year 2000 problem affect the U.S. economy?

**Yardeni:** There is a high probability, at least 40 percent, that there will be a recession in the year 2000. That recession could be as severe as the 1973-1974 global recession, which was caused by a disruption in the supply of oil. In a similar fashion, a disruption in the flow of information could be just as depressing for global economic activity.

**Roach:** A recession call in a late-cycle U.S. economy is hardly an earth-shattering revelation. After all, by then the current expansion will be in its ninth year, in line with the duration of the long-cycle expansions of the 1960s and 1980s. But to argue that the Y2K issues will trigger a downturn that is normally brought on by the Fed is a real stretch.

**Saloner:** I just don't see a big enough disruption in economic activity caused by information flows to cause a recession.

**Roach:** Companies—especially in the transaction-intensive service sector, which has really brought information technology into its culture—have radically altered their cost structure. They used to be variable-cost producers whose main assets were people—companies could adjust wages and hire and fire employees in tough economic times. But now, courtesy of the enormous spending in the Information Age, many of these once variable-cost producers have been transformed into fixed-cost producers.

The Y2K fix simply exacerbates that problem. It ups the ante on what companies must spend to keep their infrastructures working. Of all the expenditures that we've seen to date in the Information Age, the Y2K fix is the most unproductive. You get absolutely nothing in the way of incremental value-added payback. All you get out of this spending is survival.

The bottom line is that there's no problem as long as business condi-



**"Y2K's biggest effect is that it is distracting many large organizations from making strategic IT investments."**

—Garth Saloner

tions remain perfect. But we all know that the laws of the business cycle have not been repealed—there will be a recession in the United States or possibly globally in the next few years. That raises a distinct possibility that the once variable-cost but now increasingly fixed-cost producers will suffer an enormous compression of corporate profit margins courtesy of the Information Age. The next recession will be the first recession of the Information Age. I dare say that technology commitment could make it a lot tougher than any recession we've seen in a long time.

**Yardeni:** I disagree that the Y2K fix has been unproductive. Some (most?) of the Y2K spending in 1996 and 1997 also boosted productivity. However, I agree that this will be less so in 1998 and 1999 as the deadline

approaches, and it's too late to put in new technologies.

**Saloner:** The biggest effect is that it is distracting many large organizations from making the strategic IT investments that they would otherwise be making. In-house IT organizations are so focused on solving this problem that they are diverting resources from newer technologies like the Internet that could really make dramatic improvements in the way they're doing business and help them gain competitive advantage. We

won't really know what we're missing [as a result of this decreased investment in newer technologies]. Successfully adopting information technology, more than buying boxes and cable, requires strategic vision and that an organization change the way it does business. Given that this is a different and slow diffusion process, having it interrupted for four to five years while people are distracted by Y2K means that adoption and productivity improvement will be slowed further.

**Roach:** I agree with Garth but would go further—Y2K spending is just the latest example of how unproductive the IT commitment can actually be.

**Yardeni:** This [diversion of resources] is a small setback compared with the likely setback caused by a worldwide recession. [Also, not all Y2K spending has been unproductive.] Many companies have been spending on IT to fix Y2K and to modernize.

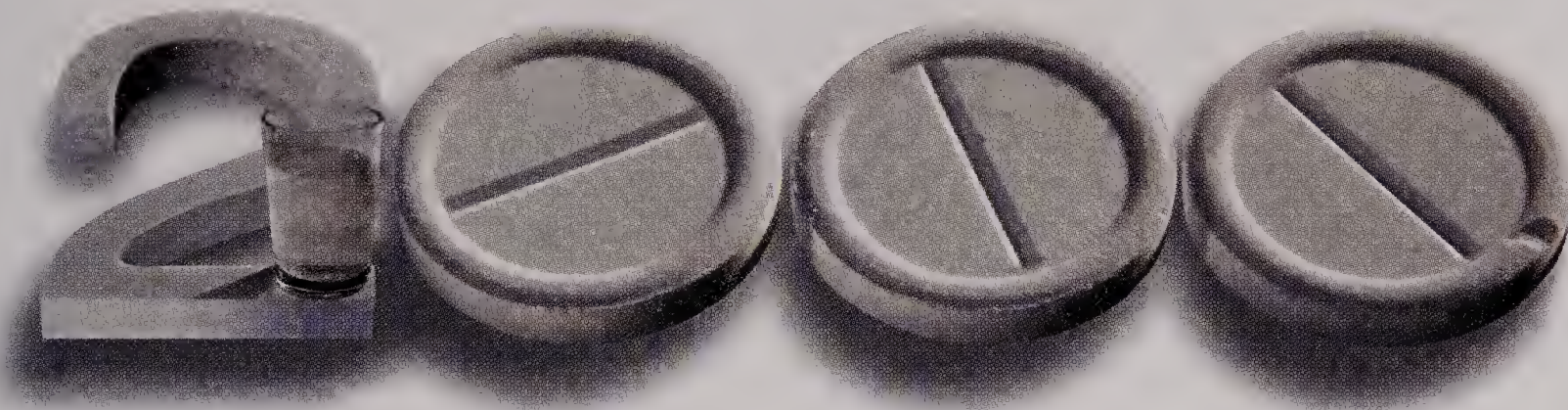
## What's the worst-case scenario? What's the best-case scenario?

**Yardeni:** All you really have to do is think of the United Parcel Service strike, combined with the failures of the Union Pacific railroad system during the past few months and the government shutdown that occurred two years ago. I am concerned that airlines will cancel many flights in



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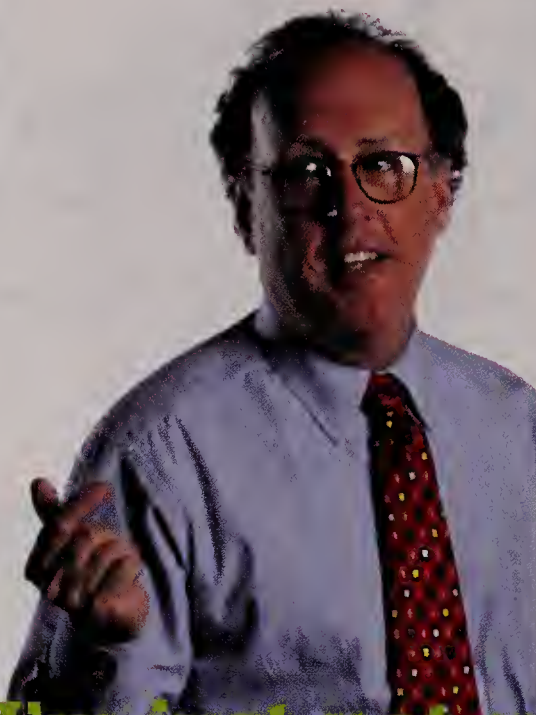


January 2000. I am optimistic that the phone system will work, but I am concerned that people will overwhelm it by calling the Social Security Administration for their disability checks and the IRS for their tax refunds. If [nuclear and electrical power plants fail and the] lights go out, we won't even know if we have a Y2K problem. Nuclear power plants are very automated and all those computer systems have to be fixed. I am not worried about safety because the safety systems are not date-sensitive, but if any other system doesn't work, like the inventory system or the system that controls the maintenance of the reactor itself, the operator will have to shut the whole thing down. Twenty-two percent of our electricity comes from nuclear power.

**Saloner:** *I think this underestimates the ability of society to cope with a disruption in information. For example, if there were a problem with Social Security disability checks, this information would be disseminated by other means (television, newspapers, etc.), relieving pressure on the system.*

**Roach:** *Shocks are for soothsayers and electricians. My crystal ball is cloudy and scattered. There are a number of other shocks that I would assign as much probability to—El Niño or Middle Eastern, EMU (European Monetary Union) and Asian issues, for example. A Y2K meltdown scenario has a very low probability in my book.*

**Saloner:** I'm not a member of the catastrophe camp here. This is not a discrete event where people come to work and half the world shuts down. Most of the processes for which Y2K is involved start to invoke long before the year 2000. As you get closer [to year 2000], you start to encounter more of the problems. That smooths the effect on the economy. I don't think we're in for a dislocation. I think a recession caused by this is extremely unlikely. I quite look forward to the year 2000



**"I'm just not going to buy into the script that the worst case is this massive failure in which the system grinds to a halt, the stock exchange doesn't open, the bond market melts down and credit card companies blow up."**

—Stephen Roach

because when the distraction is out of the way, we're going to see those resources refocused on using the amazing amount of technology that's out there.

**Yardeni:** *I am amazed by how many smart people dismiss the worst-case scenarios with so little thought.*

**Roach:** I think the worst-case scenario is that there would be another event that would occur—an external

event that would shock the United States or the global economy. That could cause a down year in the economy and would really unmask or expose the corporate commitment to the Y2K fix with painful clarity. In other words, there would be a recession [exacerbated] by a lot of costs, whether they're labor costs, technology costs in the broad sense or Y2K fix costs. There would be an outsized contraction in corporate profitability concentrated in the transaction-intensive service sector that employs about 80 percent of the American workforce. That's my worst case. I'm

just not going to buy into the script that the worst case is this massive counterparty failure in which the system grinds to a halt, the stock exchange doesn't open, the bond market melts down and credit card companies blow up. You can certainly create a scenario like that. I'm just not comfortable with viewing that as even a credible worst-case outcome. I do believe the system will survive.

**Saloner:** *I agree that meltdown scenarios are unrealistic.*

**Yardeni:** *Again, on what basis, other than gut feel do [both of you] dismiss*

*worst-case Y2K scenarios?*

**Do you expect to see a self-fulfilling prophecy—that is, economic problems occur not because of computer problems but because the public anticipates computer problems, withdraws its money from banks and stops flying or shopping?**

**Saloner:** Computers have become so much a part of our lives, I don't think the computer phobia we were used to



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in the 1960s is prevalent. People are immune to it. The worst that might happen is that a bank will forget to credit you for something it should have. It will realize it and fix it.

**Yardeni:** *I disagree. Fed officials have clearly indicated that there are major risks that banks will fail, especially overseas.*

**Yardeni:** We may have a situation where people are in total denial right up until Jan. 1, 2000. However, if the public does take this more seriously, they might behave in ways that could cause a recession in 1999. Consumers could decide it is not a good time to spend a lot of money fixing up their houses or buying new furniture. They might go to their banks and pull some money out.

**Saloner:** *People are already experiencing Y2K problems. Credit cards with expirations beyond the year 2000 sometimes don't function. It is a continuous rather than a discrete problem. People learn how to deal with it and realize it's not catastrophic. I don't foresee any panic.*

**Roach:** I believe the public must take Y2K seriously. However, I just do not envision the potential computer glitches as being a pervasive trend in the nation as a whole that will bring the economy to its knees. Consumers will make spending decisions as always—based on income, unemployment, wealth and savings objectives. They will not be bamboozled by fear-mongering.

**Yardeni:** *Being alarmed about some legitimate worst-case scenarios is not fear-mongering; it's simply a rational response to a potentially dangerous situation.*

**Do you think economic effects of Y2K will affect certain sectors of the economy more than others? If so, which ones? Will the public sector be affected more than the private sector?**

**Saloner:** Certain sectors are more mainframe-dependent than others—



**"No one is immune to the risk that vital systems will be disrupted."**

—Edward Yardeni

those with huge databases or transaction-processing environments, [such as] banks and insurance and mail order companies. There are huge institutions in these sectors that are totally on top of this problem. You're not relying on mom and pops to get it right. These [mainframe-dependent companies] are in sectors that for the most part are not extremely time-sensitive. If your insurance company is a few weeks late in processing your payment, it's not catastrophic. There's a paper trail.

**Yardeni:** Honestly, I think everybody is vulnerable. We live in an interdependent system. No one is immune to the risk that vital systems will be disrupted.

**Roach:** *It would be nice to see Ed quantify the magnitude of the supposed vulnerabilities by sector, focusing in particular on the specifics of consumer and business spending retrenchment in an era of sustained personal income and corporate profitability.*

**Roach:** In many cases, I think the government has lagged the private sector in moving into the Information Age in general. And I think Y2K compliance issues are possibly another area where there could be some [public sector] disappointments as well. This concerns me as a citizen but not as a participant in the financial markets. I do think that all the systems that are necessary for the transmission of funds and the processing of securities transactions will be compliant.

**Yardeni:** *This ignores the domino effect: Phone and electric systems must work. PCs must work. Data must not be corrupted.*

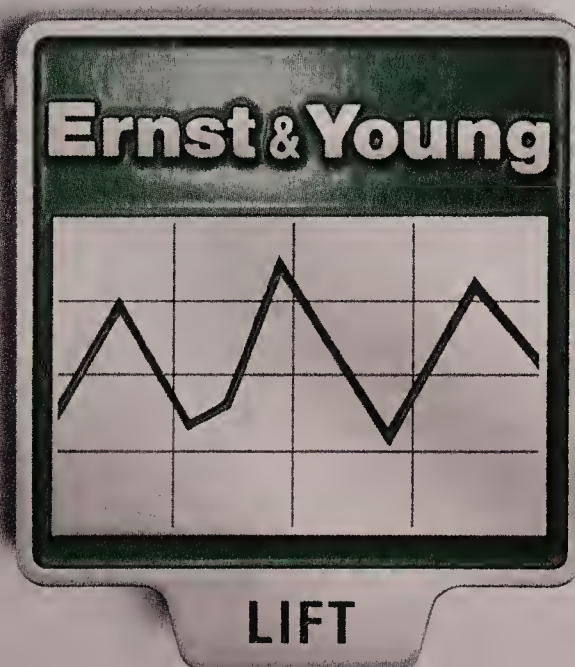
**What are the opportunity costs of devoting all this creative attention and energy to achieving a Y2K solution?**

**Saloner:** The lost opportunity primarily has to do with deploying new technologies [such as] the Internet and intranets. Every innovation that somebody makes diffuses to other firms later and there's a ripple effect. We're delaying that ripple effect. It is a road not taken.

**Roach:** My critique of the Information Age is that the bulk of the spending has gone toward low value-added infrastructure building in the transaction-processing function, which has diverted resources away from the high value-added, creative applications that can really have meaningful payback. The Y2K fix just keeps that bias alive and well. It's another example of diverting creative talent away from high value-added contributions—idea creation, product creation, market creation, the discovery of a new concept.

**Do economists predict a backlash to Y2K that will make it harder for CIOs to convince their CEOs to spend money on strategic IT, and if so, how would that affect the economy?**







## ROUNDTABLE: YEAR 2000 AND THE ECONOMY

**Roach:** Information technology is about to be unmasked for what it really is: a necessary but low-payback expenditure for a vast array of corporations. There could well be a significant backlash against low value-added infrastructure investments. [Believing IT is a necessary but low-payback expenditure] has been a very unpopular view because everybody reads *Wired* magazine and they know that this perfect new era we've moved into in terms of our economic performance is traceable to spectacular breakthroughs in information technology.

**Yardeni:** *Technology revolutions take time. There are always shakeouts and setbacks.*

**Saloner:** [Rather than a backlash,] there will be a benefit. I don't think the CEO generally tightly partitions [the budget so that this is] your Y2K money and this is your IT budget. Senior management will be more immunized to larger IT budgets than they would have been otherwise.

**Roach:** *The [money spent on] Y2K is yet another example of the dead weight of the Information Age. These outlays are completely non-productive and are nothing more than a bill for corporate survival in this new technology-led era.*

**Yardeni:** The year 2000 may not be all that horrible because it will create a huge capital spending boom. Companies that are Y2K compliant and survive a few months of disruptions are going to be in a great position to buy out their competitors who are not Y2K compliant. They may take over key vendors as well. There are tremendous opportunities

for those who plan properly.

**What defensive measures should the business community take to protect itself?**

**Roach:** It's sort of consciousness-raising. We [Morgan Stanley Dean Witter] are a multinational firm; we have a global task force. We communicated [the importance of addressing Y2K] to all our global managers in all our business units around the world. We're urging our managers to raise the focus to our counterparties as well. Beyond that, it's hard to know [what defensive measures should be taken].

**Saloner:** This is like airline safety—you're better off not talking about it because you just engender too much concern. Me fear thou dost protest too much.

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*To view the full transcripts of the interviews with Stephen Roach and Edward Yardeni, visit CIO's Year 2000 Research Center at [www.cio.com/forums/y2k/index.html](http://www.cio.com/forums/y2k/index.html). Roach further discusses the productivity paradox and Yardeni expands on his belief that Y2K will cause an economic downturn. The edited transcript from Garth Saloner's interview is also posted.*

**Roach:** *Again, the major issue is how much does all this cost? Has anyone figured out the impacts of Y2K compliance on corporate profitability?*

**Yardeni:** The Y2K issue is not a matter exclusively for information technologists and their projects. Business people have to create management committees to oversee the progress of the IT department. They need committees to stay on top of third-

party created programs and to be sure those programs are delivered on time. They need to work with customers. They need to work with vendors. They need to learn who has the best fixes because there are a lot of hacks and charlatans out there making promises.

Managers also have to think about what happens if key suppliers and key customers fail. A six-month worst-case contingency plan for operations needs to be put in place as soon as possible. Managers have

to think about operating their business on a "just-in-case" basis rather than a just-in-time basis.

**Roach:** *And what's the final tab for all this, Ed?*

**How will problems in other countries affect the U.S. economy?**

**Saloner:** My sense from talking to folks in Europe is that they're on top of it [because] there has been a more rapid transition [than in the United States] from the legacy systems in some of those countries onto architectures that didn't have a Y2K problem.

**Yardeni:** It is a global problem, and I am concerned that the rest of the world is behind the United States in awareness and in dealing with the problem. Many countries are losing programmers to the United States where they can be paid a lot more. Brazilian programmers are going to Portugal. Mexican programmers are coming to the United States. With the Asian meltdown [of its currencies and financial infrastructure], countries in that region won't be paying a lot of attention to their computer systems.

**Roach:** From what I understand, the Y2K efforts are lagging elsewhere. The United States is probably ahead of the pack. And of course Europe has the twin problems of EMU and the Y2K fix.

There's probably more risk of a Y2K accident outside the United States than within the United States. However, the intricate network of multinational companies allows one to conjure up a scenario where we're fine in the United States, but the cross-border congestion becomes acute and feeds back into our U.S. multinationals. Again, I'm not prepared to buy into that, but to the extent there are [Y2K] disparities around the world, that would certainly be a concern. **CIO**

*Howard Baldwin, Todd Datz, Perry Glasser and Abbie Lundberg contributed to this article.*



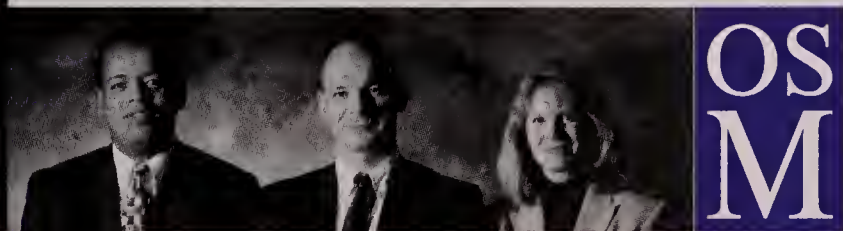


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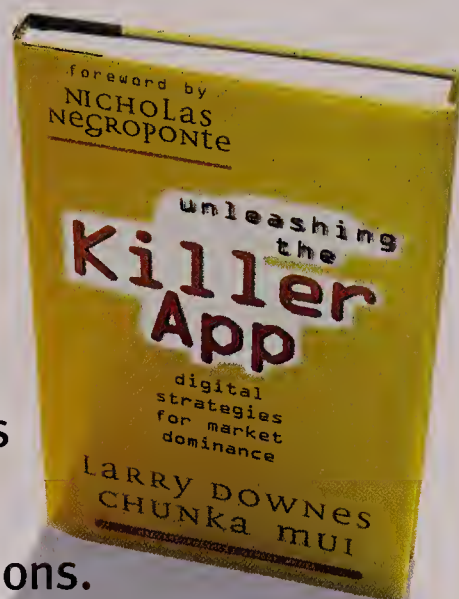




# Destroy Your Value Chain— Before Someone Else Does

The business model that creates and distributes your goods and services is imperiled by killer applications. Your best chance to survive is to strike first.

BY LARRY DOWNES AND  
CHUNKA MUI



**VALUE CHAIN:** The set of activities an organization performs to create and distribute its goods and services, including direct activities, such as procurement and production, and indirect activities, such as human resources and finance. Competitive advantage, according to Harvard Professor Michael Porter, is achieved when an organization links the activities in its value chain more cheaply or more expertly than do its competitors.

THE NEW FORCES OF DIGITALIZATION, globalization and deregulation are wreaking havoc on value chains of even superior companies. In industries as varied as banking, insurance and utilities, competitive advantage is being wiped out as new, sometimes bizarre competitors quickly produce new value chains that use a killer application of digital technology to radically alter the equation. To respond effectively, organizations must now consider scrapping rather than optimizing their value chains.

In fact, many are preemptively destroying their own value chains. Recognizing that change is coming that will make obsolete their infrastructure, force them into a commodity role or remove them from the process altogether, they are choosing to hasten the end of the old model. They use digital technology to break the rules, implicit or explicit, that dictate how buying, selling or producing goods and services is done. They form new relationships with customers and competitors by automating expensive processes or giving away proprietary tools others can use to evolve away from the industry entirely. The hope of these organizations is that by unleashing a killer app themselves, they will be able to exert control over how much earth is scorched in the process.

## Strike First

ONE OF OUR CLIENTS IS IN THE BUSINESS of selling home heating oil, a part of its larger oil and gas retail operation. It is a depressingly difficult business. The company sells to a deeply fragmented market, in which our client controls 17 percent of total sales for its market area but only 4 percent of direct sales to residents. Sales to



residents, ironically, generate 75 percent of its profits. Sales to independent local dealers are made at much lower profit margins. The company's brand name is not strong, and it is limited by restrictions from its parent company in how far it can expand into new markets and products. Exit costs, finally, are too high for the company to simply walk away from the business.

This, in an odd sense, is the good news. The prospects are so poor that the company has very little to lose in breaking the industry rules and purposefully destroying its value chain. The company has decided, therefore, to expand direct selling to the residential market, even though doing so will very likely upset the independent dealers. And it is adopting this strategy despite the fact that dealers currently have the advantage of personal relationships with customers, more flexibility on terms and delivery, and lower distribution costs.

Rather than compete with the inde-

pendents on their own terms, the oil company has designed an entirely new business model, which it calls the Virtual Fuel Company (VFC). Once complete (there are several interim stages), the company will physically exist only as the producer of heating oil, handling the remainder of activities through partners or virtually in cyberspace. In the early stages, customers will be given the opportunity to order over the telephone or through the Web, but the longer-term plan is to connect sensors in the home heating oil tanks to the production facility over a wireless network or through the home's connection to the Internet. The VFC will then tell the customer when it is time to refill rather than wait for an order. And delivery logistics will be coordinated through partnerships with leading transport companies already serving the VFC's markets, which have plenty of excess warehousing and transport capacity. The VFC will route pickup and delivery schedules to

the transportation companies' systems based on its projected sales.

Advantages of the new model for our client are obvious. The company will not need an expensive sales or distribution function because it will outsource order processing to the customer. The supply and distribution network will be virtual. And the company can use its new information channel with the customer to form alliances on matters of mutual interest, such as environmental and regulatory issues. All of this will make it possible to compete aggressively with the local dealers on price, at the same time reversing the advantages of location and personal relationships the local dealers have today. Instead of the very limited hours during which the parties can transact today, the VFC will be available to its customers for information or deliveries 24 hours a day.

#### New Killers

IN THE CASE OF THE VIRTUAL FUEL Company, a disadvantaged player

# Simon says, "Automate DLT.<sup>TM</sup>" You say, "I want to buy from Simon says, "Exabyte it."

## Exabyte it? That's right. Exabyte, the leads the way in DLTape<sup>TM</sup> automation



*Simon says, "You need more capacity."*  
**Exabyte answers, "Double the capacity at  
half the price."**



*Simon says, "What about rack density?"*  
**Exabyte answers, "Double the competition's in  
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already in the industry decided to solve its problems by wrecking the business model for everyone. It remains to be seen if this company can maintain the will to complete its strategy and what moves its former customers (and new competitors) will make in response. The market for home heating oil in the VFC's market, in any case, will never be the same.

More often, it is a startup or an organization from an entirely different industry that will destroy your value chain. These new entrants have even less of a vested interest in the old model and often can do much more damage much more quickly. Companies focused on competing in the current market often overlook these new players, dismissing them and the technology they employ as insignificant until it's too late to respond strategically.

In the United Kingdom, Barclays Bank has launched an electronic shopping mall, BarclaySquare, to give the merchant customers of its credit card business a quick and powerful entry point

into electronic commerce. BarclaySquare consists of electronic catalogs for academic bookseller Blackwell's, wine merchant J. Sainsbury, and others, and offers electronic reservations and ticketing for the EuroStar train. Transactions are backed by the solid reputation of a stately English bank.

Compare the value chain of Barclays with that of a traditional shopping mall developer and you find very little in common. The developer's key asset (and cost) is real estate, and it derives margin primarily from rent. The actual cost of construction and operation of the electronic mall, on the other hand, is trivial, and Barclays makes money as a percentage of credit card transactions it clears on behalf of its "tenants," just as it does on non-electronic transactions. Barclays created its mall solely to increase the volume of transactions of its merchant customers, but in doing so it linked the incentives for mall operator and retailer in a way that doesn't exist in the physical mall, or at

least not to the same extent.

How does the shopping mall developer, a real estate company, compete with a bank that has none of its operating costs and a very different set of financial incentives? What happens when the mall's competitive advantage, based almost entirely on location, is turned against it by a new competitor that lets consumers shop from any location in the world at any time of day or night? Three years after BarclaySquare opened its doors, is there a shopping mall developer in the world that recognizes the bank as a competitor, let alone a competitive threat?

As this example suggests, BarclaySquare and other electronic malls have the potential to destroy the value chains of a variety of today's retail firms. Shopping mall developers are an obvious target, but so too are subsidiary industries like advertising, construction, customer service and distributors. Barclays is not just a new competitor but the creator of an entirely new way of deriving revenue. If it is suc-

a leader."

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*Simon says, "What about Scalability?"*

**Exabyte answers, "Our Arrowhead™ family isn't just scalable, it's field upgradable."**



*Simon says, "Don't forget about service."*

**Exabyte answers, "Best on-site service in the industry."**

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cessful, BarclaySquare will erase competitive advantage for companies far removed from its own sphere of activity. And its development is being led, not enabled, by digital technology.

The well known Web-based virtual bookstore Amazon.com had no competition from the traditional players for over a year, even though Amazon's approach to retailing posed a threat to the big-chain bookstores' value chain at several vital links. Afraid of cannibalizing its own expensive bookstores, Borders has yet to provide a virtual service of any kind, and Barnes & Noble went online only recently. (In an ironic gesture pitting the old world against the new, Barnes & Noble filed suit against Amazon on the same day it launched its Web site, arguing that Amazon's claim to be "Earth's Largest Bookstore" was false advertising, since Amazon didn't physically have the books.) Amazon had a year in which to develop its own brand—a cyberspace year, the equivalent of seven years in the physical world—and the traditional booksellers will now need to match Amazon not only on price but on the features that have made Amazon's interface unique.

### Death of the Middleman?

EXAMPLES OF ORGANIZATIONS destroying their own value chains so far have come from companies at either end—companies, that is, that produce goods and services or that distribute them. What about everybody in the middle? Another of our clients, a division of a global transportation giant, specialized in expediting cargo between European countries based on its expertise in various import and export rules and regulations. The business disappeared one day in 1992, when Europe dropped its borders.

Middlemen are perhaps the most vulnerable to the killer app that disrupts today's industry structure. Pity the warehouse whose retailer customer decides to distribute directly to its customers using package delivery partners. Pity the bookkeeper whose job it is to consolidate financial information that the bank decides to offer as a free electronic giveaway. The death of the middleman has been a theme sounded by the academic and business trade press for years. But in many sectors these intermediaries have proved to be remarkably robust. Long chains are being taken apart, but they are also being put back together in new configurations. To paraphrase Mark Twain, reports of the

death of middlemen have been greatly exaggerated.

What's going on? We have worked with several traditional middlemen and come to the conclusion that dramatic changes are transforming but not destroying the business of many intermediates. Wholesalers and others have been operating in a largely static environment for some time, and part of the problem is that there is a serious breakdown between what intermediates do and how they charge for their services. For convenience, most intermediates' charges are based on commissions, percentages or markups on the goods they handle. Producers and retailers eager to improve their own profit margin are determined to eliminate as many of these charges as possible. What many seem to forget, however, is that middlemen are more than just what their name suggests. They add value to the goods and services that pass through their trucks, warehouses, consolidations and so on; it's just that the connections between the value and the fees charged have been lost.

Now, thanks to the new forces of digitalization, globalization and deregulation, these connections must be found, and middlemen, like everyone else, will need to inflict serious damage to their current business models to exploit them successfully. Today's wholesaler will need to take a cold hard look at current activities and extract from them the valuable skills and other information assets that it can begin offering outside the traditional industry structure. Wholesalers will become financiers, logistics specialists, outsourced presales and post-sales support providers, and more. They need to wrap information around the products they handle, adding mea-

surable value in the process. As one client from the travel industry put it, "Add value or adios."

Or perhaps a better motto would be "destroy or be destroyed." **CIO**

Larry Downes is a consultant and adjunct professor of law at Northwestern University. Chunka Mui is a partner with Diamond Technology Partners Inc., director of the Diamond Exchange executive learning forum and executive editor of the business magazine Context. They can be reached at [www.killer-apps.com](http://www.killer-apps.com).

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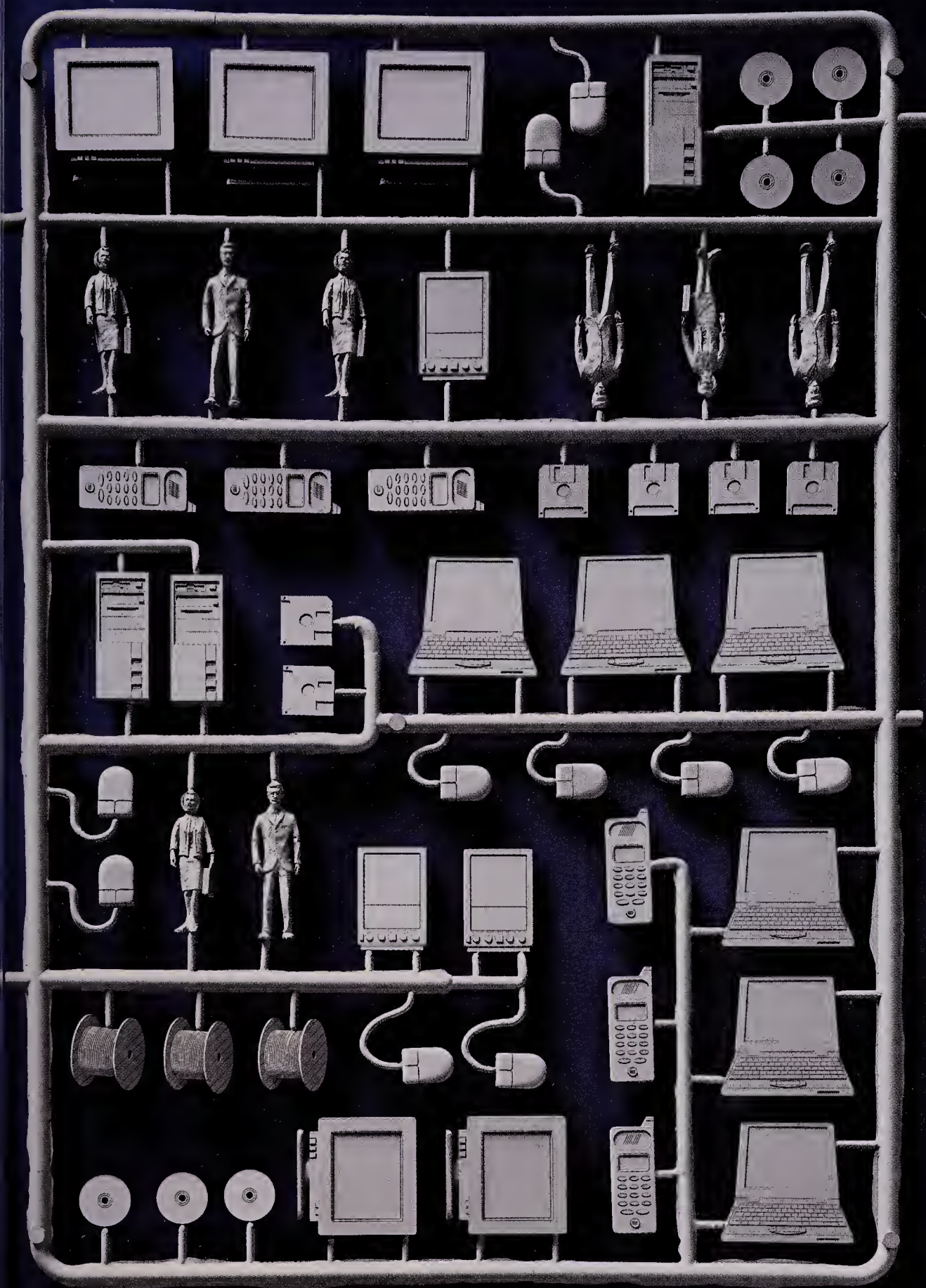
Visit our Web site to correspond with authors Downes and Mui, read an expanded version of this excerpt and link to the Killer App Web site ([www.cio.com/updates](http://www.cio.com/updates)).

For another view on restructuring business models, see "Survival of the Fastest," *CIO* Section 2, Nov. 15, 1997, an interview with Adrian Slywotzky, author of *Value Migration: How to Think Several Moves Ahead of the Competition*.

### Other CIO articles on the value chain or supply chain:

- "Lighten Up," *CIO* Section 2, Feb. 15, 1998. Enlightened companies are using new technologies to squeeze more time and money out of the supply chain.
- "EC Riders," *CIO*, June 15, 1997. How can you streamline your supply chain to include business partners? The answer lies in electronic commerce.
- "The Gap's Mick Connors," *CIO*, Nov. 15, 1996. Streamlining the global supply chain.
- "Competing Interests," *CIO*, Oct. 1, 1995. An interview with value chain and competitiveness guru Michael E. Porter.
- "The Chain Gang," *CIO*, August 1995. Successful management of the supply chain can save a company both money and time, but CIO-100 winners are taking it a step further.





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## Bang for the Buck?

*Online advertising holds great promise, but until the technology catches up with the hype, its payback will remain elusive*

BY MEGAN SANTOSUS

**B**Y ALL APPEARANCES, THE WEB IS A MARKETER'S dream. What other medium allows advertisers to interact directly with their customers and proffer a customized, one-to-one spiel? Yet despite its potential, Web advertising is still a frustrating experience for advertisers and content-site providers.

Like just about every Web-related development, online advertising is currently a victim of its own hype and lofty expectations. Content-site providers dangle carrots like targeted ads and ad tracking in front of advertisers but fail to deliver the goods. Take ad tracking: Although ad-server software can accurately measure how many people click on a banner ad, there's no way to effectively track whether such "click-throughs" result in viable sales leads.

For example, suppose 1 person out of 100 clicks on an ad for a Brand X personal computer, a lousy click-through rate of 1 percent. Based on this rate, any sentient advertiser would yank the ad faster than you can say, "I was a corporate sponsor of the Nagano Olympics." But what if that person purchases \$750,000 worth of machines? The ad campaign would have more than earned its keep, yet the advertiser following conventional advertising wisdom would have prematurely pulled the plug.

Without a way to relate click-throughs to consumer purchases, online marketing folks cannot be held accountable for how many sales leads they generate. If no one can tell whether a banner ad results in worthwhile sales leads—not to mention actual online transactions—how does an advertiser evaluate the effectiveness of its online pitches?

At the moment, advertisers are grappling with these and other basic questions. If an ad has a low click-through rate, is it because the copy is lame? Or is the content site where the banner appears demographically challenged?

Another problem muddying the waters is a lack of auditing standards across sites. Without uniform metrics—to say nothing of uniform definitions—one ad agency might give ad impressions top billing while another might rely on click-through rates to determine an ad's effectiveness. Until standards are agreed upon, information sifted from reports across sites has all the

accuracy of a New England weather forecast. That's to say, it's not very useful for anything but short-range plans.

The Web is an exciting new advertising medium and, as such, requires a new way of thinking. The Web is interactive. In order for it to live up to its potential, people need to stop emphasizing how many times a banner ad is flashed before viewers' eyeballs. While auditing standards won't guarantee better click-through information, standards at least will provide advertisers with a baseline from which they can measure their campaigns across multiple sites.

Direct marketers, advertisers and content sites are starting to

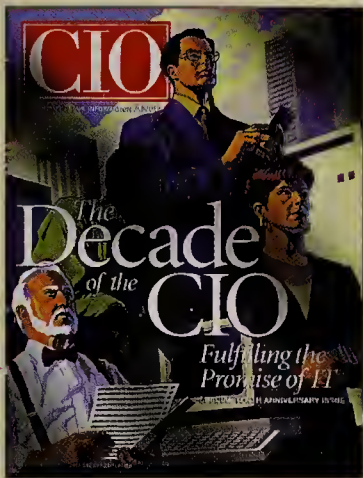
clamor for more advanced technologies that will enable the kind of tracking and targeting the Web promises. Ad-server vendors and audit firms would do well to listen to them. After all, if advertisers want an amorphous medium, they can always turn to skywriting. **CIO**

*Features Editor Megan Santosus can be reached via e-mail at [santosus@cio.com](mailto:santosus@cio.com).*





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# The Customer Software Shakeout

*It's 2002. Do you know where your customer data is?*

BY TOM DAVENPORT

IT'S A LITTLE HARD TO UNDERSTAND, BUT FOR THE first several decades of the Age of Whopping Expensive Calculators we generally ignored customers. OK, after we had automated payroll and accounting we realized we'd need to bill customers to collect money, so we started including customer files in financial systems. And our products had to be shipped somewhere, so we added the customer's name and address (often different from the one in the financial system, sometimes for good reason and sometimes not) to our manufacturing systems. Despite the lurking presence of customer transactional data in many back-office systems, we never did much with it. Perhaps—and I'm not kidding—we lacked consultants to point out how valuable the analysis of customer information could be. Maybe we needed slogans like “customer relationship management,” “one-to-one marketing” and “customer intimacy” (sorry, but my thoughts always turn elsewhere when I hear that one) to urge us on.

The shortage of tools to manage customer information has become but a distant memory. Now we have such a surfeit of customer-oriented software that we have too many places to put those useful little facts about customers and how we've dealt with them. Today's challenge is to accurately predict tomorrow's customer information architecture and to lay the groundwork so that the pieces will eventually fit together.

There are four basic types of customer information software. (I'm not counting software for customer knowledge, such as groupware and Web-based tools that allow construction of textual repositories, threaded discussions, and search and retrieval. I'll cover that topic in a future CIO column.) Three of the types correspond to customer-facing business

functions; the fourth is enterprise resource planning (ERP) software, which, as its vendors like to claim, corresponds to everything.

## Sales-Force Automation Software

ROUGHLY 15 YEARS AGO, COMPANIES BEGAN TO REALIZE that they could improve management of sales information. Early sales-force automation (SFA) applications focused mainly on basic data “transactions” such as order-status checking, call reporting, and time and expense reporting. But most SFA systems also included tools to store or at least access customer

data. This market was nearly killed by the \$99 contact manager, though some high-end sales-force systems, such as those from Siebel Systems and Trilogy Development Group, survived. These systems store information about

customer contact and sales processes—customer preferences, customized product configurations, order history and so forth. However, they are not broad enough in functionality to act as the primary repository of customer information.

## Customer Service Software

THE SECOND TYPE OF customer software involves customer service and support and the selling activities that occur in call centers. Leading

vendors in this category include Vantive, Scopus Technology, Clarify and Onyx Software. This type of software—often called customer asset management or customer information management—also initially focused on transactions, in this case automating service trouble tickets at help desks and other support tasks. These systems are now also used to capture customer comments and to create repositories of solutions to customer problems, but such high-level functionality usually takes





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# Handshake

a back seat to organizing transaction chaos. Because call centers also do sales, this category and the SFA category are beginning to overlap; vendors in each area offer functionality typically found in the other. The customer asset management category is also starting to overlap with Web-based self-service software for customers and employees.

## Market Research Software

THE CUSTOMER SOFTWARE BEHIND Door Number 3 serves the marketing function. It might be called customer analytics because the primary focus is to understand which customers are buying what and to identify the customers we should concentrate on serving, or serving well. Major vendors in this category include Oracle and IBM (both of which acquired analytics technology companies) as well as Donnelly Marketing Information Services, Harte-Hanks Data Technologies and Exchange Partners. Although companies have used customer analytics since the early 1980s, this category has never really taken off, perhaps because it's not focused on transactional data. You need to appreciate higher-order thinking to buy this stuff in the first place, and to make it work you need people who got A's in both computer science and statistics classes. Although we should, in fact, segment, prioritize and value our customer relationships, dire need doesn't force customer analytics on a company. This software perches at the top of Maslow's hierarchy of needs; self-actualization and learning don't take place until after transactional data—the food and shelter of customer information—has been taken care of.

## Enterprise Software

THE FOURTH CATEGORY OF CUSTOMER software is ERP, which can't seem to control its girth. It keeps oozing into all of the other categories, usually because its vendors keep acquiring other vendors that can provide extra functionality. ERP's strength in the customer information arena is that it's the transaction system of record for customer interactions throughout the organization—from accounts payable to warranty management. As of mid-1998, ERP systems can record almost anything one wants to know

about customer relationships. ERP also forces organizations to achieve companywide consensus on the meaning of the term customer and associated entities. This is generally a good thing, although it's not easy to do and it requires some functions to employ definitions that don't exactly meet their needs.

You can't yet use an ERP system to turn customer information into customer insights, but that's changing. Recently, Baan bought a customer asset management system, Oracle bought several customer analytics systems used in consumer products and banking, and SAP bought an SFA company. The ERP vendors (especially SAP) are also rapidly developing new customer-oriented capabilities. One pretty good set of integrated systems for collecting, manipulating and analyzing customer information will likely materialize within the next few years. Of course, your customer may get tired of waiting and abandon you before customer software nirvana arrives.

## What to Do?

GIVEN THE PROLIFERATION OF CUSTOMER software options, organizations need to decide where the different pieces of customer information will reside and how to integrate them into a coherent whole. Most companies should:

**ENSURE** that at least the most important customer information is uniform companywide now and stays uniform over time.

**IDENTIFY** which system will hold and maintain the basic customer information from which other systems will draw.

**DESIGNATE** which systems and business functions will address sales, service and analytics issues that relate to customer information.

**DEFINE** how the different customer-oriented systems will communicate.

Ignore this advice and you may find that the customer who seems peachy from a sales standpoint costs you more than your profits in service calls or that much of your attention goes to customers who aren't worthy of it in the long term. And getting customer information straight can yield many business

benefits. For example, GE Capital, which collects customer data in several different systems, credits its standardized approach to customer information across its many business units as a key factor in its ability to monitor lending risk for all customers, no matter how far-flung.

Although integrating your customer software is critical, it's just as important to have an integrated organizational approach to customer information. With all the diverse functions that touch the customer, someone needs to ensure the commonality, consistency and quality of customer information. At Hewlett-Packard, for example, a customer information "czar" ensures that at least basic

customer information, such as company name and address, is accurate and uniform across multiple systems and business units. It's less important to specify whether sales, customer service, marketing or operations "owns" the

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various types of customer information—senior executives in almost every company should declare that it belongs to the entire organization—than to make clear the roles and responsibilities of customer information stewardship. Finally, with better management of customer information comes more risk. It's important to ensure that a salesperson leaving the company, for example, can't take the customer information with him on a Zip disk.

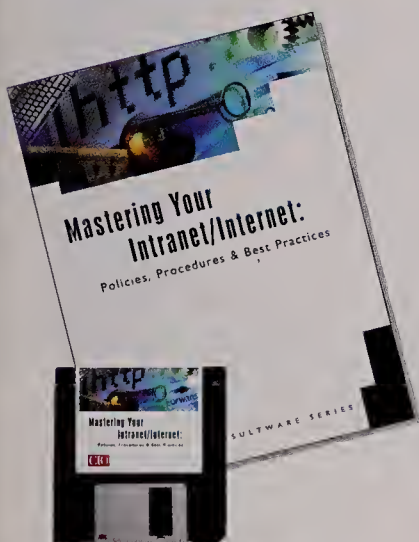
If information is an asset, customer information should be among the most prized assets. It's likely that software vendors will make customer information easier to manipulate. The management and organizational issues, of course, are up to us. **CIO**

*Thomas H. Davenport is a professor and director of the Information Management Program at the University of Texas at Austin. He welcomes reader comments at [davenport@mail.utexas.edu](mailto:davenport@mail.utexas.edu). Editor's note: For more on customer information software, see "A CIS and a Prayer," CIO Section 2, Feb. 15, 1998.*





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# Index

Page numbers refer to the first page of the article(s) in which the company is mentioned. This index is provided as a service to readers. The publisher does not assume any liability for errors or omissions.

## Company Index

|                                               |        |
|-----------------------------------------------|--------|
| Aberdeen Group Inc.                           | 48     |
| ADT Security Services Inc.                    | 48     |
| Allied Domecq PLC                             | 36     |
| Allied Domecq Retailing USA                   | 36     |
| Amazon.com Inc.                               | 68     |
| AT&T Corp.                                    | 48     |
| Baan Co., The                                 | 76     |
| Barclays Bank PLC                             | 68     |
| Barnes & Noble Inc.                           | 68     |
| Borders Inc.                                  | 68     |
| Casio PhoneMate Inc.                          | 18     |
| Cisco Systems Inc.                            | 36     |
| Citicorp                                      | 36     |
| Citizens Communications                       | 48     |
| Clarify Inc.                                  | 76     |
| Columbia Healthcare Corp.                     | 36     |
| Compass America Inc.                          | 28     |
| Coopers & Lybrand LLP                         | 18     |
| CyberGold Inc.                                | 18     |
| Deutsche Morgan Grenfell                      | 58     |
| Diamond Technology Partners Inc.              | 68     |
| Donnelly Marketing Information Services       | 76     |
| Electronic Data Systems Corp.                 | 18     |
| EnergyOne LLC                                 | 48     |
| Exchange Partners                             | 76     |
| Gartner Group Inc.                            | 28     |
| General Electric Appliances                   | 48     |
| General Electric Capital                      | 76     |
| Harte-Hanks Data Technologies                 | 76     |
| Hewlett-Packard Co.                           | 76     |
| IBM Corp.                                     | 18, 76 |
| ICL Inc.                                      | 18     |
| InternetPerks Inc.                            | 18     |
| Intuit Inc.                                   | 48     |
| J. Sainsbury PLC                              | 68     |
| Kenan Systems Corp.                           | 48     |
| Masco Tech Inc.                               | 36     |
| MCI Telecommunications Corp.                  | 48     |
| Microsoft Corp.                               | 48     |
| Morgan Stanley Dean Witter & Co.              | 58     |
| National Foundation for Women Business Owners | 18     |
| Network Management Group Inc., The            | 48     |
| Onyx Software Corp.                           | 76     |
| Oracle Corp.                                  | 76     |
| Oxford Health Plans Inc.                      | 36     |
| Philadelphia Energy Co.                       | 48     |
| Price Waterhouse LLP                          | 48     |
| Roselle Associates                            | 18     |
| SAP AG                                        | 76     |
| Saville Systems                               | 48     |
| Scopus Technology Inc.                        | 76     |
| Siebel Systems Inc.                           | 76     |
| Siegel & Gale Inc.                            | 48     |
| Society for Human Resource Management         | 18     |

|                                     |    |
|-------------------------------------|----|
| Teltech Resource Network Corp.      | 28 |
| Time Warner Telecom                 | 48 |
| Travelers Group Inc.                | 36 |
| Trilogy Development Group Inc.      | 76 |
| US West Inc.                        | 28 |
| UtiliCorp United Inc.               | 48 |
| Vantive Corp., The                  | 76 |
| Visa International                  | 18 |
| Volkart May & Associates Inc.       | 28 |
| Warner Lambert Co.                  | 28 |
| Working Assets Funding Service Inc. | 48 |
| Yankee Group, The                   | 48 |

## Advertiser Index

\*Denotes Section 2 Advertisers

|                                |                        |
|--------------------------------|------------------------|
| 3Com Corp.                     | 17                     |
| Adante                         | 29*                    |
| Amdahl Corp.                   | 29                     |
| Arbor Software                 | 63                     |
| Attachmate Corp.               | 21*                    |
| BMC Software                   | 15                     |
| Business Objects Inc.          | 33*                    |
| Cabletron Systems Inc.         | 16*                    |
| Cadas Software                 | 55*                    |
| Candle Corp.                   | 42*, 44*, 46*          |
| Canon USA Inc.                 | 65                     |
| CCD Online Systems Inc.        | 19*                    |
| CIO Communications Inc.        | 75*, 79*, 81*, 82A, 83 |
| Compaq Computer Corp.          | C2*                    |
| Computer Associates Intl. Inc. | C4, C4*, 5             |
| Compuware Corp.                | 24                     |
| Data General Corp.             | 35                     |
| Dell Computer Corp.            | C2                     |
| Dow Jones & Co.                | 13*                    |
| Dun & Bradstreet Software      | 71                     |
| EDS Corp.                      | 61*                    |
| EMC Corp.                      | 73                     |
| Ernst & Young LLP              | 65*                    |
| Exabyte Corp.                  | 15*, 70*               |
| Exide Electronics              | 75                     |
| Filenet Corp.                  | 21                     |
| Gateway 2000 Inc.              | 10                     |
| GTE Corp.                      | 10*, 75*               |
| Hewlett-Packard Co.            | 6, 66, 78              |
| IBM Corp.                      | 22*, 47                |
| Information Builders Inc.      | 5*                     |
| Intel Corp.                    | 18                     |
| JD Edwards & Co.               | 34*                    |
| Kingston                       | 48                     |
| Lexmark Corp.                  | C3                     |
| Lockheed Martin Corp.          | 53*                    |
| Lucent Technologies            | 9*                     |
| MCI Communications Corp.       | 25*                    |
| MicroFocus                     | 63*                    |
| Microsoft Corp.                | 2, 30, 56              |
| NCR Corp.                      | 42                     |
| Open Systems Management        | 67*                    |
| Oracle Corp.                   | 9                      |
| PC Expo                        | 56*                    |
| Pegasystems Inc.               | 77                     |
| PeopleSoft Inc.                | 6*                     |
| Platinum Technology Inc.       | 82*                    |
| Quintus                        | 81                     |
| SAS Institute Inc.             | 23                     |
| Seagate Software               | 37                     |
| Secure Computing Corp.         | 27*                    |
| Sequent Computer Systems       | 51*                    |
| Softline                       | 57*                    |
| Sprint Corp.                   | 33                     |
| Sun Microsystems Inc.          | 27                     |
| Sybase Inc.                    | 69                     |
| TBI                            | 77*                    |
| Toshiba America Inc.           | 38                     |
| Unisys Corp.                   | 13                     |
| Veritas Software               | C3*                    |
| Wang Laboratories Inc.         | 73*                    |
| Xerox Corp.                    | 31*                    |

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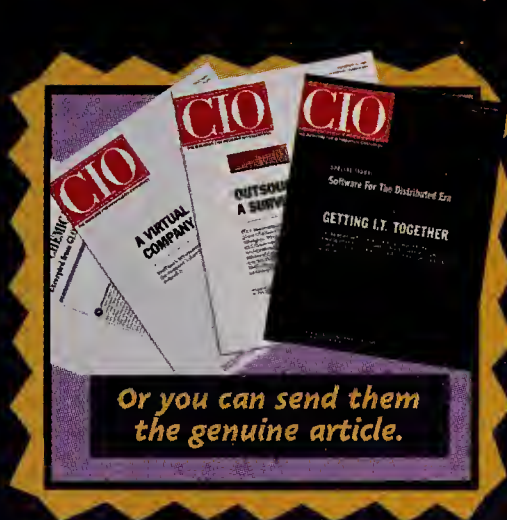
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# Digging for Data

OPTIMISTIC MINERS WHO DROPPED EVERYTHING to go west during the gold rush were looking for those sparkling little nuggets that promised to make them rich. In many respects, using a data warehouse is a lot like those journeys west. Companies that go about it the right way discover software packages that help them pickax their way through mountains of data. If they successfully implement data warehouses, they may uncover unexpected buying patterns to aid decision making, cut costs and improve customer service.

However, like those who couldn't resist the allure of immediate wealth, so too can a company fall prey to the hype of the competitive advantages of data warehousing. There might be gold in them thar collections of company data, but the wrong approach to data warehousing could empty a company's pockets before its miners even reach the foot of the hill.

**How does a data warehouse work?** Today's data warehouse is a user-accessible database of historical and functional company information fed by a mainframe. Unlike most systems, it's set up according to business rather than computer logic. It allows users to dig and churn through large caverns of important consumer data, looking for relationships and making queries. That process—where users sift through piles of facts and figures to discover trends and patterns that suggest new business opportunities—is called data mining.

All that shines is not gold, however. Data warehouses are not the quick-hit fix that some assume them to be. A company must commit to maintaining a data warehouse, making sure all of the data is accurate and

timely. (See CIO's Data Warehousing Resource Center at [www.cio.com/forums/data/index.html](http://www.cio.com/forums/data/index.html).)

**What's the ROI?** Benefits and rewards abound for a company that builds and maintains a data warehouse correctly. Cost savings and increases in revenue top the list for hard returns. Add to that an increase in analysis of marketing databases to cross-sell products, less computer storage on the mainframe and the ability to identify and keep the most profitable customers while getting a better picture of who they are, and it's easy to see why data warehousing is spreading faster than a rumor of gold at the old mill.

For example, the telecom industry uses data warehouses to target customers who may want certain phone services rather than doing "blanket" phone and mail campaigns and aggravating customers with unsolicited calls during dinner.

Some of the soft benefits of data warehousing come in the technology's effect on users. When built and used correctly, a warehouse changes users' jobs, granting them faster access to more accurate data and allowing them to give better customer service.

A company must not forget, however, that the goal for any data warehousing project is to lower operating costs and generate revenue—this is an investment, after all, and quantifiable ROI should be expected over time. So if the data warehousing effort at your organization is not striking it rich, you might want to ask your data warehousing experts if they've ever heard of fool's gold.

—Tom Wailgum

## Buzzwords

**Data modeling:** An outline of how you want to set up your data warehouse: where the data will come from, how it will relate to the other packets of data and how it will be used.

**SQL:** (pronounced "sea-quil"). The structured query language for accessing relational database systems. Basically, it defines for

the data warehouse what you want it to do.

**Data scrubbing:** An ongoing data warehousing process that ensures that all data is "clean"—trustworthy and timely.

**Data mart:** It's just like a data warehouse but isn't quite as big in scope. Standalone data marts can offer quick solutions to a specific departmental or small business problem.





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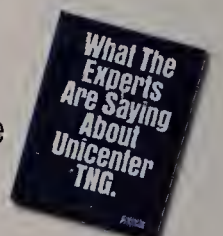
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